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WHAT WOULD YOU DO?

Two IT leaders explain how they would handle five hypothetical scenarios involving data privacy. Page 42

SUPPLY-CHAIN Rx

Suppliers like vitamin makers are sprucing up their supply chains with collaborative technology. Page 7

ZOOMING AHEAD

Instead of using desktop GUIs, you'll zoom in on what you need, says a renowned designer. Page 62

COMPUTERWORLD

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CHRISTOPHER TUCKER, chief strategist at In-Q-Tel, is looking for technologies useful to both the CIA and the private sector.

CLOAK DAGGER IT

THE CIA'S VENTURE CAPITAL ARM, called In-Q-Tel, is scouring the nation for new technologies that could solve information management problems in the spy business — or any other information-intensive business. So, what is it finding? Gary H. Anthes uncovers several gems, including software that spots crime rings and an amazing search engine for intelligence analysts. *Story begins on page 58.*

WIRELESS AIMS HIGH; SKILLS IN DEMAND

MOBILE ACCESS

Technology tapped for more airport LANs

BY BOB BREWIN

PARIS

Air France has ambitious plans beginning next month to deploy wireless LANs at 12 French airports and to add applications to its first wireless LAN here at Charles de Gaulle Airport.

Michel Lacoste, Air France's wireless systems engineer for all 155 airports it serves worldwide, said the carrier will launch its second wireless LAN operational next month at the country's Strasbourg airport. These LANs, which will support aircraft maintenance and other ground operations, will provide Ethernet-like connectivity to PCs mounted in support vehicles.

FedEx Corp. has also started a pilot test of wireless LANs to support aircraft maintenance

Airport LANs, page 77

Programmer shortage slows development

BY JULEKHA DASH AND LEE COPELAND GLADWIN

A shortage of programmers and architects trained in building wireless applications is hampering some ventures and making IT leaders more cautious about taking the wireless leap.

Statistics are hard to come by, but recruiters, analysts and e-commerce workers say the new skills required for wireless technologies and the fast-changing nature of the field could spell trouble ahead.

The shortage of wireless skills is "tremendously delaying projects" for end users, said Charles Moore, president of recruiting firm Active Wireless ESG Inc. in South Daytona, Fla., though he declined to be specific.

Moore said he also believes the shortage has affected the

Programmers, page 77

OPEN-SOURCE BREAKS INTO BANKING

Integration tool to speed global trading

BY LEE COPELAND GLADWIN

A German bank wants to introduce open-source development to the insular, security-conscious world of investment banking.

The London-based investment banking arm of Dresdner Bank AG, Germany's third-biggest bank, last week launched its custom-built, back-end integration tool, called Open Adapter. The open-source application lets the bank reconcile its global banking and trading accounts faster.

By placing the software in the open-source community, Dresdner Kleinwort Wasserstein hopes to promote the use of the integration tool at other banks, said Al-Noor Ramji, CIO at the investment bank.

"The domino effect should be the reduction in the time it takes to make and settle a trade," he said. Using the tool, Dresdner has cut its account settlement times from five days to three and hopes to re-

Open-Source, page 16

Back-End Banking

Dresdner Kleinwort Wasserstein's Open Adapter:

- Is a Java-based integration tool that uses XML to describe investment banking transactions. It runs on Apache and Linux
- Is available online for free at www.openadapter.org
- Cost the investment bank $5 million to develop

IT PLAYS KEY ROLE IN JET CONTRACT

$200B deal hinges on data management

BY JAMES COPE

With a multibillion-dollar contract for the Joint Strike Fighter at stake, two competing contractors, Lockheed Martin Corp. and The Boeing Co., are counting on their IT systems to help one of them get the nod.

Final proposals are due to be presented to the Department of Defense this week for a contract estimated by the government to be worth as much as $200 billion. Lockheed and Boeing both said winning the contract hinges on demonstrating their ability to control costs and predict aircraft performance.

And both said managing product data — which virtualizes multiple configurations of a very complex aircraft to be used by the U.S. Navy, U.S. Air Force, U.S. Marine Corps and the British Royal Air Force — is what will enable them to demonstrate that ability. That's where the software comes in.

Jet Contract, page 14

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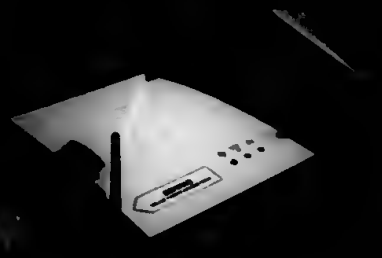
THINK OUTSIDE THE CUBE.



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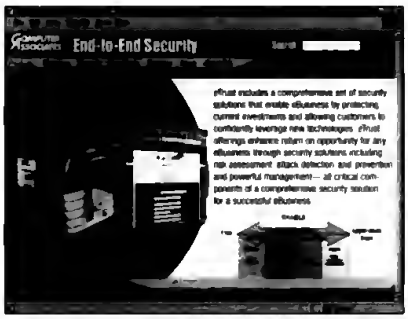

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*According to "Internet Security Software 1999 Worldwide Markets & Trends," by IDC

THE WELL-WIRED COMMUTER

Whether you go to work by plane, train or automobile, there are a host of products on the market to help you stay connected all the time. Even walkers and joggers would be surprised at the amount of work they might get done on the way to the office. Here's a look at the products that can make it all happen. But be warned, this isn't necessarily such a good thing. Page 44

RISING DOUGH

Krispy Kreme isn't a Wall Street darling just because of its glazed doughnuts. Web-enabled applications are helping its stores to operate more efficiently and enabling the North Carolina-based food chain to capitalize on its expansion strategy. And CIO Frank Hood (above left) is helping to lead the charge. Page 46

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6 **DELTA LAUNCHES** a service on its Web site for corporate travel agents.

8 **INTERNET PRIVACY** debate turns on customers being able to opt in or opt out of providing personal data — and the bottom line, companies say.

8 **THE FTC IDENTIFIES** 200 firms it says are illegally trading personal financial data.

10 **ENRON LAUNCHES** an exchange to match spare capacity owned by storage service providers with corporate users.

10 **CORPORATE IT SHOWS** an interest in managed VPN services like those offered by AT&T and WorldCom.

12 **THE INTRODUCTION OF** seven new top-level domains meets resistance as critics claim that ICANN is unfair.

12 **STAPLES EQUIPS** its U.S. stores with interactive Internet kiosks.

14 **FINANCIALLY AILING** Baan releases Web-based products as part of a comeback effort.

16 **LINUX USERS EYE** 2.4 kernel released at LinuxWorld, but some say it has a way to go before it's ready for the corporate desktop.

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34 **AUTHOR AND CEO** Jessica Lipnack shares her ideas for effectively managing work teams spread across various locations.

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38 **E-MAIL POLICIES** draw criticism from some, but many say such workplace policies are enforced only when basic protocols are violated.

42 **PRIVACY THREATS** don't always have obvious solutions. In recent interviews, two CIOs talk about how they would react to various privacy issues.

QUICKSTUDY

50 **CHURN CAN BE** the kiss of death for dot-coms. To succeed, say advisers, companies need to focus on turning one-time shoppers into loyal customers.

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60 **HIGH-TECH TOOLS** make spying on corporate competitors easier than ever before.

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62 **THE DESKTOP ICONS** of current interfaces could go the way of the green screen, predicts the man best known as the creator of the Macintosh.

QUICKSTUDY

64 **SINGLE SIGN-ON** simplifies authentication and authorization for both users and administrators.

ONLINE

You're ready to migrate to Windows 2000. Or are you? Alex Bakman offers eight tips in our **Windows 2000 Community** for organizing your migration project that could speed the process — or even help avert disaster. *www.computerworld.com/windows2000*

You can't do business without it these days, but most professionals say they're getting too much of a good thing. Susan Hunt Stevens discusses how to deal with e-mail overload in the **E-Commerce Community**. *www.computerworld.com/ecommerce*

Now, you can read your favorite *Computerworld* columnists online, including archived articles, at *www.computerworld.com/columnists*

OPINIONS

30 **MARYFRAN JOHNSON** feels that with all the ubiquitous connectivity around, we need devices that are smart enough to know when to leave us alone.

30 **PIMM FOX** finds a lesson in communicating with employees following Disney's decision to shutter its Go Network.

31 **EMILY FRYE**, an attorney, says destroying e-mail could land you in legal hot water.

32 **ALEX TORRALBAS** writes that while the Web is indeed a global thing, it requires a more local approach for global commerce.

32 **BILL LABERIS** lists four areas in which President Bush can make a mark on IT.

38 **PAUL A. STRASSMANN** says recent movements in the stock market indicators should foretell a change in corporate attitudes toward IT spending.

78 **FRANK HAYES** writes that vendor anxiety over Linux is good news for IT buyers.

AT DEADLINE

AstraZeneca, IBM Ink Outsourcing Deal

Pharmaceutical giant AstraZeneca PLC in London will outsource its IT operations to IBM in a deal worth $1.7 billion over seven years, the companies announced last week. IBM's Global Services division will run AstraZeneca's global IT infrastructure, performing a range of IT functions in support of pharmaceutical divisions in 45 countries, according to IBM.

Panel Suggests Cybercrisis Agency

A congressionally appointed panel of national security experts last week recommended the creation of the National Homeland Security Agency to oversee government and private-sector efforts to protect the nation's critical infrastructure from cyber and physical attacks. The U.S. Commission on National Security urged the Bush administration to form the new agency and to include a National Crisis Action Center as a "focal point for monitoring emergencies and for coordinating federal support in a crisis to state and local governments, as well as to the private sector."

Short Takes

Union organizers withdrew two charges of unfair labor practices that were recently filed against online consumer electronics retailer ETOWN.COM in relation to an ongoing attempt to set up a union for workers at the company. . . . MVP.COM INC., an online retailer of athletic wear and equipment, is closing its Chicago operations and laying off its remaining 43 employees. . . . CONTINUUM HEALTH PARTNERS INC., a group of three hospitals in New York, signed a seven-year, $360 million IT outsourcing agreement with New York-based CAP GEMINI ERNST & YOUNG U.S. LLC. . . . COMPAQ COMPUTER CORP. said it has signed a contract with the U.S. POSTAL SERVICE that could be worth billions of dollars. Due to kick off at the end of the first quarter, the contract will allow the Postal Service's 800,000 employees to each buy up to two Compaq Presario Internet PCs for home use over the life of the three-year deal.

Officials Take Action Against Security Hole

In a move some view as risky, CERT announces patch at press conference

BY DAN VERTON

When Internet security groups last week discovered what has been called one of the most significant vulnerabilities in years, they did something that even they considered unusual, if not extraordinary: They held a press conference.

"There's always a tension between getting information out to the people who need it and getting it out to the [hackers] who might use it," said Shawn Hernan, team leader for vulnerability handling at the CERT Coordination Center at Carnegie Mellon University in Pittsburgh, which led the charge against the vulnerability. "We don't often issue press releases. The problem is, we don't know what the intruders know."

CERT and Network Associates Inc. subsidiary PGP Security in Santa Clara, Calif., released simultaneous warnings last week about vulnerabilities in multiple versions of the Internet Software Consortium's Berkeley Internet Name Domain (BIND) server software (see box).

BIND allows Web servers run by companies and Internet service providers to translate text-based Internet addresses into numbered IP addresses that can be read and understood by computers.

Window of Vulnerability

Because BIND is used by more than 80% of all domain name servers on the Internet, officials faced the daunting challenge of getting the word out that a patch was available and needed to be installed immediately.

How many companies heeded the message and downloaded the patch isn't known, but no break-ins resulting from the BIND problem were reported last week. However, in an unrelated matter, Network Associates' servers were hit with a denial-of-service attack last week (see page 16).

"The history is unfortunate in that a lot of people just don't upgrade," said Hernan. "It's difficult, if you're not really paying attention, to distinguish the insignificant vulnerabilities from the real problems."

One of the organizations government and private-sector experts hope will improve and expand information-sharing is the recently created IT Information Sharing and Analysis Center (IT-ISAC) in Atlanta. It is the fourth such industry organization created so far.

"We don't hold press conferences," said Dan Ingevaldson, a technical manager at Internet Security Systems Inc. in Atlanta, which runs the IT-ISAC. "We think the benefits of keeping the exploits secret outweigh the benefits of learning how the exploits work. We don't hand out the keys."

Planning for the Future

Without passing judgement on CERT's response in the BIND case, Harris Miller, president of the Arlington, Va.-based Information Technology Associatioo of America, said that there may be incidents in the future when "shouting from the rooftops is not the best way to spread the word."

In those cases, having an organization like the ISAC will be essential, he said. "As to which situations call for a very visible announcement and which call for a more controlled community to share that information, I do not think it is easy to generalize," Miller added.

Tim Atkin, director of critical infrastructure protection at consulting firm SRA International Inc. in Fairfax, Va., acknowledged the concerns some people may have about going public with warnings. However, "our greatest vulnerability is still human error or lack of information," he said. Although outreach efforts are still in their infancy, they're getting a lot of attention from the security community, he noted.

CERT won't know for months how successful its efforts were in the case of the BIND vulnerabilities, said Hernan. The time line for when vulnerabilities are announced vs. when hackers usually begin to exploit them is somewhere between nine months and two years, he said.

"If we can go a year and get a reduced number of exploits, we will have done better than the last time," Hernan said, referring to the now-infamous distributed denial-of-service attacks that felled sites such as eBay Inc. and CNN a year ago. ▶

JUST THE FACTS

The BIND Vulnerabilities

Systems affected: Domain name servers running BIND Versions 4.9.x prior to 4.9.8 and 8.2.x prior to 8.2.3.

Threat profile: Vulnerability could allow hackers to remap Internet addresses, take over systems, execute code and conduct denial-of-service attacks.

Delta Air Lines' Web Site Goes Corporate

Business travelers will have access to discounted fares

BY MICHAEL MEEHAN

Consumers have been the recipients of the majority of the airline's online perks, but Delta Air Lines Inc. last week debuted a managed corporate travel service on its Web site.

Corporate employees will be able to log on to Delta's site using their frequent-flier numbers, book travel in a way that credits the corporation's volume agreement with the airline, and have access to deeply discounted Web fares.

Peter Buchheit, director of travel and meeting services at Towson, Md.-based The Black & Decker Corp., said the inability to access an airline's best fares for corporate travel purposes has been frustrating for many workers at his company.

"You're working against your best customers, in some respects," he said.

Scott Slater, general manager of corporate programs at the Atlanta-based airline, said, "Our largest corporate customers were coming to us and saying, 'Find me a way to book those fares.' "

Southwest Airlines Inc. in Dallas is the only other sizable domestic airline that offers such a program.

Anticipating a Trend

Henry Harteveldt, a senior analyst at Forrester Research Inc. in Cambridge, Mass., said he expects most airlines to establish similar programs in the coming year. He estimated that companies will buy $4.3 billion worth of airline tickets this year, with $2.7 billion of that as part of managed corporate travel programs.

Atlanta-based auditing and finance company PRG Inc. took part in Delta's one-year beta test. The firm's former corporate travel manager, Anna Kershaw, said PRG employees previously had to go through a travel agency to place corporate travel orders. The agencies charged roughly $25 per ticket.

"For a company that books 5,000 tickets with a given carrier, that's $125,000 a year," Kershaw said.

The one red flag raised by travel managers is that the Delta system doesn't currently permit companies to establish their own business rules.

Rather, travel managers must log on to Delta's site to perform self-audits of what kind of travel is being purchased by their employees.

"If every carrier does this, it creates another data stream for each one, and that creates fragmentation," Buchheit said. "You'd like to have more central control than that." ▶

Pharmavite to Launch Collaborative System With Kmart

Pilot results in sales, inventory savings

BY MARC L. SONGINI

Vitamin manufacturer Pharmavite Corp. said it wants to keep the supply chain between it and Kmart Corp. healthy by using a new application to improve inventory planning, customer service and forecasting.

Northridge, Calif.-based Pharmavite's software is one of several applications that use the relatively untested collaborative planning, forecasting and replenishment (CPFR) model.

A CPFR system lets trading partners and customers work together closely via Web connections to realize efficiencies in inveotories and customer service — and save money as a result.

"The use of collaborative technologies is relatively oew, even though the technologies have beeo around for five years or so," said Lora Cecere, an analyst at Stamford, Conn.-based consultancy Gartner Group inc. A lack of standardization for the technology, as well as lack of trust between retailers and suppliers, has hampered its acceptance until now, she said.

But interest is growing. A report released by Newburyport, Mass.-based research firm Industry Directions Inc. last April — the most recent available — showed that 68% of 130 manufacturers, distributors and retailers were piloting, researching or preparing a CPFR-based rollout. In addition to Troy, Mich.-based Kmart, companies performing CPFR pilots include Canadian Tire Corp., Kimberly-Clark Corp. and the Transora.com grocery exchange.

The benefits of using a CPFR system are many. Gartner, in a study based on CPFR use at 20 companies doing business with Kmart and other retailers, estimated that CPFR can improve inventory accuracy by 5% to 15%, reduce the supply chain's operations cost by 20% to 35% and pay for itself in four to six months. Observers explained that turnaround and return on investment will depend on the relative state of the forecasting and supply-chain infrastructure.

PHARMAVITE expects to gain efficiencies from a supply-chain application based on a collaborative planning, forecasting and replenishment model.

Indeed, Pharmavite, which began its CPFR pilot in August and will go live with the system next month, has already identified incremental sales and inventory savings that will more than pay for the software, said Art Karrer, Pharmavite's CPFR project manager.

The initiative's cost is in the tens of thousands of dollars, but the company does several millions of dollars' worth of business with Kmart each year, he said.

"CPFR gives us the ability not only to manage inventory but [also to] understand retail sales movements," Karrer said. By using its collaboration tool to connect to Kmart's collaboration and forecasting systems once per week, Pharmavite will know what mix of products to send along and get better control of the flow of inventory, helping avoid charge-back fees for returned merchandise, Karrer explained.

Bell Sports Corp., an Irving, Texas-based bicycle accessories maker, is another Kmart supplier that says it has seen improved forecast accuracy and better inventory management in the 90 days it has been linked to the retailer.

John Doerr, vice president of supply-chain management, said he especially likes the easy-to-use Web interface that lets users find desired numbers and results quickly. "It's made a dramatic improvement in our ability to manage [the supply chain]," he said.

Kmart officials couldn't be reached for comment.

Friends or Rivals?

Irving, Texas-based Kimberly-Clark has been using CPFR applications with key customers since 1999, said Larry Roth, a senior consultant at the company and member of a CPFR standards group. One of CPFR's advantages is that the system automatically flags the most prominent discrepancies in supplier and retail product forecasts, he said.

Yet there are cultural hurdles to overcome. Joe Andraski, vice chairman of the Lawrenceville, N.J.-based Voluntary Interindustry Commerce Standards CPFR board, notes that many companies view each other as rivals rather than partners.

The board recently released a draft XML specification for CPFR.

"XML is the enabler, but I think the key to CPFR success is a collaborative attitude among trading partners," Andraski said.

Short-Haul Trucker to Roll Out Location-Tracking System

Cell phone network pilot delivers ROI, service benefits

BY BOB BREWIN

Having conducted a successful pilot test, Roadway Express Inc. plans to expand a cell-phone-network-based data communications system combined with a vehicle-location tracking system to 20 of its 388 terminals nationwide, becoming one of the first less-than-truckload (LTL) short-haul carriers to establish such a system.

Although more than one-third of the long-haul trucking fleets have deployed two-way data communications, only 4% to 5% of the LTL carriers that perform numerous delivery and pickups in major urban areas have adopted such technology, according to the American Trucking Association (ATA) in Alexandria, Va.

Akron, Ohio-based Roadway piloted the new data communications system, OmniExpress from San Diego-based Qualcomm Inc., at six of its terminals, with several hundred trucks. The test showed an increase in driver and dispatcher productivity, as well as a demonstrated return on investment.

Roadway CIO Bob Obee said the test produced what he called "a satisfactory return on investment." He declined to say whether Roadway has plans to extend the new system to its other terminals.

Obee said Roadway developed the interfaces between the two-way data communications system and its back-end systems in-house, and he described the project as "not major, in terms of Roadway IT."

AT A GLANCE

Keep On Truckin'

Roadway Express has identified the following benefits from its truck data-tracking system:

- Demonstrated ROI during pilot test
- Enhances driver and dispatcher productivity
- Uses relatively low-cost cell phone networks for communication
- Provides location as close as a street address

Financial Deterrents

The OmniExpress system, which includes truck-mounted data terminals and Global Positioning System (GPS) receivers that communicate over Sprint PCS Group's digital cell phone network, has "already improved the dispatcher environment dramatically. ... It eliminates the chatter on [voice] radio systems. It is a much more efficient way to communicate between dispatcher and driver," Obee said.

The built-in GPS receiver, which relays a truck's position to a map display on a dispatcher's computer screen, lets the dispatcher eyeball the location of all trucks working out of a particular terminal, Obee said.

"This allows us to better serve the customer," he said. "In the past, we had instances where a customer called an order in, and we had a driver going by [that location] without us knowing its location."

The GPS-derived position information lets dispatchers pinpoint truck locations as specific as a street address, Obee said.

Over-the-road haulers have used communication-satellite-based systems for years to communicate with drivers and track loads.

But LTL carriers that perform pickups and deliveries have been slower to embrace the technology, with cost being a real deterrent, said Kevin Holland, a technology specialist at the ATA.

Obee declined to break out operating or installation costs for the new system. However, Chris Wolfe, senior vice president and general manager of Qualcomm's wireless business division, said Kansas City, Mo.-based Sprint PCS Group's network-based OmniExpress system costs less than its satellite-based data and tracking system, with costs further shaved by the "short-burst" messages exchanged between vehicles and the dispatcher.

- Pharmavite uses software from Logility Inc.
- Kimberly-Clark uses software from Syncra Systems Inc.
- Bell Sports uses Logility's and Syncra's software.
- Other vendors include SAP AG, Manugistics Group Inc. and OMI International Inc.

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Making CPFR Work

CPFR requires Web-based collaborative applications to be attached to supply-chain forecasting and demand software.

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Short-Haul Trucker to Roll Out Location-Tracking System

Cell phone network pilot delivers ROI, service benefits

BY BOB BREWIN

Having conducted a successful pilot test, Roadway Express Inc. plans to expand a cell-phone-network-based data communications system combined with a vehicle-location tracking system to 20 of its 388 terminals nationwide, becoming one of the first less-than-truckload (LTL) short-haul carriers to establish such a system.

Although more than one-third of the long-haul trucking fleets have deployed two-way data communications, only 4% to 5% of the LTL carriers that perform numerous delivery and pickups in major urban areas have adopted such technology, according to the American Trucking Association (ATA) in Alexandria, Va.

Akron, Ohio-based Roadway piloted the new data communications system, OmniExpress from San Diego-based Qualcomm Inc., at six of its terminals, with several hundred trucks. The test showed an increase in driver and dispatcher productivity, as well as a demonstrated return on investment.

Roadway CIO Bob Obee said the test produced what he called "a satisfactory return on investment." He declined to say whether Roadway has plans to extend the new system to its other terminals.

Obee said Roadway developed the interfaces between the two-way data communications system and its back-end systems in-house, and he described the project as "not major, in terms of Roadway IT."

AT A GLANCE

Keep On Truckin'

Roadway Express has identified the following benefits from its truck data-tracking system:

- Demonstrated ROI during pilot test
- Enhances driver and dispatcher productivity
- Uses relatively low-cost cell phone networks for communication
- Provides location as close as a street address

Financial Deterrents

The OmniExpress system, which includes truck-mounted data terminals and Global Positioning System (GPS) receivers that communicate over Sprint PCS Group's digital cell phone network, has "already improved the dispatcher environment dramatically. ... It eliminates the chatter on [voice] radio systems. It is a much more efficient way to communicate between dispatcher and driver," Obee said.

The built-in GPS receiver, which relays a truck's position to a map display on a dispatcher's computer screen, lets the dispatcher eyeball the location of all trucks working out of a particular terminal, Obee said.

"This allows us to better serve the customer," he said. "In the past, we had instances where a customer called an order in, and we had a driver going by [that location] without us knowing its location."

The GPS-derived position information lets dispatchers pinpoint truck locations as specific as a street address, Obee said.

Over-the-road haulers have used communication-satellite-based systems for years to communicate with drivers and track loads.

But LTL carriers that perform pickups and deliveries have been slower to embrace the technology, with cost being a real deterrent, said Kevin Holland, a technology specialist at the ATA.

Obee declined to break out operating or installation costs for the new system. However, Chris Wolfe, senior vice president and general manager of Qualcomm's wireless business division, said Kansas City, Mo.-based Sprint PCS Group's network-based OmniExpress system costs less than its satellite-based data and tracking system, with costs further shaved by the "short-burst" messages exchanged between vehicles and the dispatcher.

Legislating Privacy May Hurt Bottom Line

Debate over sharing of Web-shopper data shifts to analysis of economic impact

BY PATRICK THIBODEAU
WASHINGTON

PRIVACY REGULATION has the potential to raise a company's marketing and IT costs, said industry groups and end users who are preparing to challenge the growing push for privacy laws in Congress by outlining the economic consequences.

For instance, the New York-based Information Services Executive Council, in a study that hasn't yet been released, said a preliminary estimate of the impact of a variety of opt-in requirements on catalog and Internet apparel retailers shows that such a requirement could add $1 billion in costs to a $15 billion industry. That's because consumers are less likely to opt in — that is, check a box to say they agree to the sharing of personal data with third parties for marketing purposes — than they are to opt out when given the opportunity to forbid the sharing of that information.

And the loss of that data would be a blow to companies' efforts to establish databases of marketing information, said Michael Turner, the council's director. Those firms would face higher costs as they try to compensate for the data loss.

By better targeting customers, "I can be more efficient marketingwise, and that is going to lower my cost, and I can pass those cost savings to consumers," said Peter McGonagle, a senior vice president at Cendant Corp., a New York-based conglomerate that runs businesses ranging from hotels to financial services firms.

When privacy regulations are applied to IT systems, specific privacy rules are "very akin to the accounting world," said Andy Martin, former chief technology officer at Austin, Texas-based Garden.com Inc., which sold its assets to Wal-Mart Stores Inc. subsidiary Walmart.com and Warminster, Pa.-based Burpee Holding Co. "Everything has to be strictly audited, and that's where I think the IT effect can be."

The economic impact of privacy hasn't gotten enough attention from regulators, said Federal Trade Commissioner Orson Swindle, a Republican who said he disagrees with the approach the Federal Trade Commission (FTC) took toward privacy during the Clinton administration. The FTC's recommendation to Coogress last year for privacy regulation made "a rather burdensome [online privacy] regulatory regime without any kind of a cost-benefit analysis," he said.

"We argued that self-regulation was not working when, in fact, all the facts indicated that it is working," he said.

The FTC might see a shift in its approach to online privacy when the term of Chairman Richard Pitofsky ends in September. Pitofsky is one of three Democrats on the five-member FTC board, and President Bush is expected to appoint a Republican, creating a Republican majority that would be more inclined toward promoting self-regulation.

Many privacy groups argue that there's a lack of economic data to show that adopting an opt-in standard would be burdensome to businesses.

"Right now I think the case can be made that companies are losing business because of lack of trust, and it seems right now any way to help trust will help business," said Ari Schwartz, a policy analyst at the Center for Democracy and Technology in Washington. ▶

The Opt-In Debate

Companies contend that many consumers wouldn't opt in if given the option.

INDUSTRY VIEW: If shoppers make it more difficult for companies to share data, costs will increase.

PRIVACY ADVOCATES' VIEW: Privacy is preferred, but there's no consensus on whether opt-in should be required in all cases.

E-Santas on Time, No Fines

Online retailers did a much better job of meeting their shipment commitments during this past holiday season than they did the year before, according to an official at the FTC.

The 2000 online holiday shopping season "went very smoothly for America's consumers," said Jodie Bernstein, director of the FTC's Bureau of Consumer Protection. "We know that online sellers toned down their shipment claims and beefed up their back-office functions . . . so that they were much better positioned to deliver on their claims."

That was a big improvement over the 1999 shopping season, when the commission was inundated with complaints. The FTC sued seven companies, collecting more than $1.5 million in fines. It said it has no plans to sue anyone this year.

– Patrick Thibodeau

Group Proposes Online Privacy Guidelines

New self-regulation plan called 'better than average'

BY LINDA ROSENCRANCE

A consortium of vendors focused on technology for personalizing Web sites last week issued a set of self-regulatory data privacy guidelines as part of a continuing effort by companies and trade groups in the IT industry to stave off regulatory intervention by the federal and state governments.

The guidelines, proposed by the Wakefield, Mass.-based Personalization Consortium, come as Congress and various state legislatures are moving to consider proposals regarding online privacy.

Independent Audits

The Personalization Consortium — which includes Fort Worth, Texas-based American Airlines Inc. and a mix of online advertising firms and vendors of personalization software — said its members will be required to submit to independent audits to ensure that they're adhering to the privacy guidelines.

Some of the oew guidelines require participating firms to do the following:

- Provide customers with clear and conspicuous notice of their information-gathering practices, including what personal informatioo they collect, how they collect it and how they plan to use it.
- Collect only the amount of individual and household data necessary to perform a specified set of tasks.
- Implement appropriate security methods and technologies to protect personal data.
- Offer Web site users tbe ability to "opt out" of having their personal information collected, shared or used.
- Give individual users "reasonable access" to personal data and give them the opportunity to correct or delete information.

Privacy advocate Jason Catlett, president of Junkbusters Corp. in Green Brook, N.J., said the consortium's guidelines are "better than average" for a vendor proposal.

"I see a lot of industry guideline proposals, and most of them are lamentably bad," Catlett said. "This one has some good elements in it." ▶

FTC Issues Warning to Firms Selling Consumer Information

BY JENNIFER DISABATINO

The Federal Trade Commission (FTC) said last week that it had identified 200 firms — 175 of them on the Web — that offer to collect personal financial information and then sell it to third parties, in violation of federal law.

FTC staffers surfed 1,000 Web sites and scanned 500 print advertisements looking for companies that offer to obtain and sell private data about consumers, such as asset or bank account information, to third parties. Such information can then be used to obtain credit under a victim's name or to steal assets.

The practice of obtaining data about people under false pretenses is called pretexting.

The investigation, called Operation Detect Pretext, is continuing, according to an FTC spokesman. The focus is on companies that offer to sell the information and not on those that buy it, he said. He wouldn't elaborate on the kind of information the companies were collecting.

Debt collectors can legitimately obtain such information, but some may sell it for illegal purposes, said Brad Bowler, the assistant director of tbe division of financial practices at the FTC's Bureau of Consumer Protection.

The Gramm-Leach-Bliley Act prohibits anyone from obtaining a customer's information by using false representations, fictitious documents or forgery.

On Jan. 26, the FTC sent notices to approximately 200 firms, warning that their practices must comply with federal laws, including the Gramm-Leach-Bliley Act and the Fair Credit Reporting Act.

The FTC said it would continue to monitor Web sites and print-media advertisements.

Violations may result in civil penalties of as much as $11,000 for each violation, as well as criminal penalties. ▶

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BRIEFS

Lenders Team for Online Auto Loans

Looking to automate the car loan process, New York-based J.P. Morgan Chase & Co., Fort Worth, Texas-based AmeriCredit Corp., and San Francisco-based Wells Fargo & Co. said they're launching a new lending Web site called DealerTrack.com Inc. The site will be run as an independent business and boasts 4,000 auto dealerships as members of its network. The idea is for auto dealers to submit online credit applications to multiple lenders and quickly come back with loans for their customers.

Judge: Toysmart Can Destroy Customer List

U.S. Bankruptcy Judge Carol Kenner has given defunct online toy retailer Toysmart.com the green light to destroy its customer list, in what should be the final chapter in the demise of the online retailer. Kenner approved a plan filed earlier this month by Buena Vista Internet Group, a subsidiary of The Walt Disney Co. in Burbank, Calif., which owns 60% of Toysmart. The agreement called for Buena Vista to pay Waltham, Mass.-based Toysmart $50,000 to destroy the list.

Amazon Announces Layoffs, Cutbacks

Amazon.com Inc. joined the parade of online retailers that are making cutbacks aimed at reducing their losses. The company disclosed plans to lay off 15% of its employees and consolidate its distribution and customer service facilities. The restructuring plans include a reduction of about 1,300 jobs at the Seattle-based company.

Don't Blame IT

Computers and networking equipment use only a small percentage of the nation's electrical energy output, according to a study by the Environmental Energy Technology Division of Lawrence Berkeley National Laboratory in Berkeley, Calif. The high-tech gear accounts for about 2% of total electrical use in the U.S., the study found.

Enron Seeks to Broker Storage Deals

Exchange targets corporate customers that have varying storage needs

BY LUCAS MEARIAN

While technology service providers have long been talking about data storage as a utility that should be sold in the open marketplace like electricity or natural gas, little has been done to pool market resources to hawk surplus disk-array capacity.

But that's exactly what a subsidiary of Houston-based Enron Corp. is doing by launching a business-to-business exchange that it said will seek to match spare capacity owned by storage service providers (SSP) with corporate users who want to be able to quickly scale up and down the amount of storage they have available.

Enron Broadband Services last week announced that it has already signed a deal with Waltham, Mass.-based StorageNetworks Inc. and is negotiating similar agreements with at least six other SSPs. If successful, Enron's business proposition could go far toward generating a set of operating standards for the emerging SSP business, analysts said.

Opportunity for Vendors

John Clavin, executive vice president of marketing at StorageNetworks, said SSPs likely bear the cost of hooking up customers to data centers in order to root out their excess storage. On the other hand, storage vendors, he said, will likely see Enron's proposition as an opportunity to sell off additional boxes to SSPs to supply the expanded market.

"It's a market with a mix of small and large players and companies that define their roles differently," said Ken Weilerstein, an analyst at Gartner Group Inc. in Stamford, Conn. Enron's plan could also help enterprise-level users get additional benefits with the storage capacity they're renting, such as security and disaster recovery support, be added.

Ravi Thuraisingham, director of global bandwidth risk management at Enron Broadband, said the new offering won't include additional security features.

But Enron does plan to standardize on a set of SSP services and bundle them with disaster recovery and bandwidth capabilities, he said.

Initially, Enron expects to charge users monthly fees of $25 to $55 per gigabyte of managed storage, depending on market conditions and the length of time a company expects to need the capacity.

"We're there to try to discover a market-clearing price," said Thuraisingham, adding that the service is tentatively due to go online in the third quarter.

Enron said it has already signed Edeo Prairie, Minn.-based Best Buy Co., one of the leading retailers of consumer electronics, computers and software in the U.S., to buy the storage capacity it needs to support a customer relationship management application through StorageNetworks.

Connecting users such as Best Buy to available storage could take from three days to three months, said Thuraisingham.

Under Enroo's plan, storage capacity owned by participating SSPs will be connected to an existing network of switching hubs set up to pool bandwidth resources.

Enron said it has 18 switching centers, or "pooling points," in the U.S., and another seven overseas that can be used to monitor storage transactions between buyers and sellers.

AT A GLANCE

Enron Services

- Enron, a $101 billion Houston-based energy corporation, last year introduced the concept of trading bandwidth capacity.
- Enron Broadband Services, a subsidiary of Enron Corp., plans to use a switching fabric at 20 "pooling points" in cities worldwide to provide an interconnecting platform for enabling and monitoring bandwidth and storage transactions between buyers and sellers.
- Initially, the B2B model would charge a monthly rental fee of $25 to $55 per gigabyte of storage, depending on the length of use and services requested.

Users Consider Outsourcing Their VPNs

WorldCom, AT&T demo at ComNet

BY JAMES COPE

Corporate IT leaders seeking more effective ways of connecting their headquarters with geographically dispersed facilities were busy eyeing managed VPN services offered by big telecommunications companies at the ComNet Conference and Expo in Washington last week.

AT&T Corp. and WorldCom Inc. demonstrated how their managed virtual private network (VPN) services were already changing the way companies connect with remote employees.

Because VPNs create private encrypted tunnels between company sites through the Internet, companies can save thousands of dollars annually over private lines and direct-dial costs.

Bill Noble, director of electrooic communications at Lincolo National Corp. in Philadelphia, said be believes that the two big carriers appear to be on target with their corporate network services. Noble said he's curreotly shopping for a service provider that could set up and manage a VPN connecting 2,000 remote employees with Lincolo's operations ceoter io Fort Wayne, Ind.

Noble said he wants to hire a third party to set up and manage Lincoln's VPN because be has neither the time nor the resources to deal with it in-house. "I want the service provider to own and manage the VPN tunnel and all the components on a subscription basis," he said.

Noble, who said he plans to issue a request for proposals (RFP) oo a managed VPN in about two weeks, added that he likes the flexibility in AT&T's offerings, which use Internet Protocol-based VPNs that run ou top of frame-relay and asynchronous transfer mode (ATM) networks, as well as its VPN service that runs over the public Internet.

Waiting for Proposals

But Noble said he had some concerns about WorldCom's VPN offering, which uses its UUnet Internet backbone and user access services.

"They want me to agree to using their access services for my remote locations," Noble said. AT&T doesn't have that constraint, he said, and AT&T would let remote locations use almost any Internet service provider to get to an AT&T VPN. Nevertheless, Noble said he intends to wait for responses to his RFP to determine what services providers were actually willing to offer.

A WorldCom spokeswoman said the reason the company bundles its access services with its VPN offering is to ensure end-to-end network security.

To date, AT&T has focused oo running IP networks on top of existing private frame-relay and ATM networks, said Steve Harris, an analyst at IDC in Framingham, Mass. AT&T is now moving toward more pure IP networks, Harris said.

Jerry Squires, security administrator at the Maryland Department of Transportation in Glen Burnie, said he agrees it's a hassle to manage and monitor a VPN internally. Still, be said be isn't "a big fan of outsourcing when security is involved."

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ICANN Under the Gun of Congress, Other Groups

Approval process for seven new top-level domains viewed as flawed, unfair by some

BY PATRICK THIBODEAU
WASHINGTON

THE GROUP charged with managing the Internet's domain name system, the 2-year-old Internet Corporation for Assigned Names and Numbers (ICANN), may be facing a challenge to its legitimacy.

The U.S. House Commerce Committee, citing concerns about the process ICANN used to select seven new domain names, is expected to hold a hearing Thursday to examine whether ICANN's selection process thwarts competition.

ICANN's critics will ask the committee to reopen the domain selection process.

ICANN is also facing the threat of litigation from the American Civil Liberties Union and other groups over its handling of the domain selection process, as well as litigation from businesses that failed to win approval for top-level domains after paying a $50,000 application fee.

Whether ICANN can successfully add new top-level domains without sinking under the weight of litigation threats and congressional oversight is far from clear.

The addition of the new domains approved by ICANN's board this past November — .aero, .biz, .coop, .info, .museum, .name, and .pro — isn't automatic. The U.S. Department of Commerce has final authority over any domain additions.

"The process has been fundamentally flawed," said Lou Kerner, who runs a domain name registry as the CEO of dotTV Corp., a Los Angeles company that issues Web addresses using .tv. Kerner was part of a consortium that sought recognition for .nom.

But ICANN's go-slow approach in adding new domains has won praise.

"If you are going to introduce new [top-level domains], introduce them responsibly . . . so there isn't a wholesale ripping off of intellectual property," said Mark Heltzer, government relations manager at the International Trademark Association in New York.

More Domains, More Opportunity

Others see that approach as unfair. "It's pretty obvious that more top-level domains means more opportunity for small businesses and entrepreneurs to get meaningful domain names that reflect their business interest as well as free speech interest," said Mikki Barry, president of the Domain Name Rights Coalition, a Herndon, Va.-based group that represents small businesses.

Esther Dyson, who recently stepped down as chairwoman of ICANN, said she would have liked to have added more top-level domains but wanted to keep the registry at a manageable size for technical reasons, primarily to avoid hurting the domain name system, the service that translates domain names into IP addresses.

"You want to avoid unnecessary technical challenges to a system that seems a little stressed currently," she said.

There aren't obvious alternatives to ICANN, but the government could reassert control over the domain name process; it has both the contracts and the muscle to do that, said Jonathan Zittrain, co-director of the Berkman Center for Internet & Society at Harvard University. "We've chosen this middle path — sort of an experiment between the public and the private — and we've got to see how it pans out," he said.

Business wouldn't support a resumption of government control of the process, said Rick Lane, director of e-commerce and Internet technology at the U.S. Chamber of Commerce. "It's been moving in a very positive direction, and we haven't heard or seen anything out there yet that could replace ICANN," he said.

Maybe ICANN Can't

In November, ICANN agreed to add seven new domains.

PROS: Trademark groups like ICANN's cautious approach and say ICANN is preferable to the government in this role.

CONS: Critics say ICANN's domain selection process was unfair. They may try to block new domains.

Staples Joins Kiosk Retailers

Aim is more in-store orders, selection

BY LUCAS MEARIAN

In a bid to boost sales and services through its Web site, office products retailer Staples Inc. last week announced that it has equipped each of its 954 U.S. stores with interactive Internet kiosks that customers can use to order items from the company's online catalog.

Framingham, Mass.-based Staples, which previously tested the kiosks at 20 stores, said it's installing up to four of the systems at each retail location. The kiosks will pave the way for the company to expand the number of items that can be ordered in its stores from 7,500 to 45,000, plus more than 100,000 software packages and dozens of business services.

The idea of in-store Internet kiosks isn't new. Barnes & Noble Inc., Best Buy Co. and Kmart Corp. have all installed them in an an attempt to make it possible for shoppers to buy items that can't be crammed onto the shelves.

Always Online

Retailers that have installed in-store Web kiosks:

But the success of interactive systems that let shoppers browse through Web-based catalogs depends heavily on the makeup of a retailer's customer base and whether the technology goes beyond what can be bought in a store, said Barrett Ladd, an analyst at Gomez Advisors Inc. in Waltham, Mass.

Rocky Hill, Conn.-based Ames Department Stores Inc. installed kiosks in 10 of its stores in 1999 so customers could view products from vendors, said corporate spokeswoman Amy Romano. The experiment lasted only about six months; the discount retailer's customer base — harried mothers with children in tow — simply didn't have time to browse a Web site, Romano said. She also agreed with Ladd that at least some of the disinterest in the kiosks had to do with Ames' customers being less computer-savvy than shoppers at higher-end stores.

Successful at Best Buy

Minneapolis-based Best Buy has seen great success with two types of kiosks it installed in 412 stores: one on which customers can buy laptop and desktop computers, and another for shopping at the store's online site, Bestbuy.com. A spokeswoman said that in December, more than one-third of Best Buy's computer sales came from in-store kiosk orders.

A study on the success of Internet kiosks that was conducted by Summit Research Associates Inc. in Rockville, Md., and was updated earlier this month, found that three out of 10 projects failed because the machines weren't sufficiently maintained or didn't function properly from the start.

But Francie Mendelsohn, the research firm's president, said she doesn't think Staples is likely to join the list of the failures. Staples is "a very smart . . . retailer," she said.

Priceline Turns to IT to Aid Customer Service

BY LUCAS MEARIAN

Struggling online discounter Priceline.com Inc. last week announced that it has beefed up the technology that runs its name-your-own-price Web site, in an attempt to improve online customer service.

Priceline, which ran into financial problems in October when airline ticket sales dropped by 20% from the previous month's already weak level, said its order processing system has been upgraded to speed up response times to price bids to within 15 minutes "in almost all cases."

Norwalk, Conn.-based Priceline also said its online order form has been shortened by 20% and equipped with new "graphically enhanced instructions" that should make it possible to submit bids in minutes. In addition, its ticketing system has been changed to help ensure that the maximum scheduled connection time for domestic flights is three hours.

Complaints from the site's users and a failure to respond quickly to them resulted in Priceline being temporarily expelled from the Connecticut Better Business Bureau.

The company was reinstated in December after its Web site was upgraded to include listings of all taxes and fuel surcharges that would be applied to airline ticket sales.

Product Quicktake

Spotlight on ORSUS for Enterprise-Class Mobile Integration

ebizQ
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www.ebizQ.net

Mobile integration is becoming increasingly important as Internet-enabled wireless devices are expected to outnumber wired Internet devices by 2002. The challenges for enabling mobile commerce and mobile field services include supporting multiple emerging device standards, providing timely access to multiple data sources, creating a user-friendly interface for mobile devices and enabling rapid change in business requirements and technology. An adaptable mobile infrastructure must separate the user interface from the business logic and leverage functionality in existing systems.

ORSUS Solutions' iGlue Wireless is a mobile integration platform that enables the easy creation and rapid deployment of mobile applications that incorporate data and functionality from multiple back-end systems to build task specific mobile interfaces. These interfaces can be deployed to multiple types of mobile devices. iGlue Wireless can also be deployed with leading application servers to enable mobile integration of existing and new applications.

The product uses a process modeling approach in which the business processes of the mobile applications are graphically defined. The processes themselves may be contained in packaged and/or legacy applications or Web sites. The mobile interface is defined separately, which enables flexible deployment to multiple devices. This separation of interface and business process is key to enabling change, especially as mobile standards and devices are evolving rapidly.

The iGlue Wireless development environment also decreases the skill level required to build mobile applications because it does not require Wireless Markup Language (WML) or HTML coding and does not require access to source code for back-end applications.

Product Description

Although wireless application technology is still in its infancy, iGlue Wireless enables the development of enterprise-class applications and provides an adaptable platform that leverages existing resources. Companies planning to deploy enterprise-class mobile applications should put iGlue Wireless on their short list for evaluation.

iGlue Wireless is composed of a development environment, iGlue Process Builder and a deployment environment, iGlue Wireless Application Server.

iGlue Process Builder is a graphical development environment for defining business processes that constitute a Web or wireless service. It creates two process definitions — an integration process and a presentation process. The integration process describes the tasks that must be automated by accessing remote Web sites, back-office applications and databases.

The presentation process defines the user experience for the new mobile application, including tasks, navigation logic and the WML HTML cards. The two process definitions are linked through input and output data that define the flow of information between the wireless device and the Web or back-office systems.

The ability to test and maintain the system for reliability are key requirements for enterprise applications. To meet these requirements, iGlue Wireless provides tools to ensure the validity of the process. The ProcessDebugger is used to interactively debug process definitions during development and maintenance. The Process Checker is a business process validation tool that ensures integration with existing systems are still valid during the deployment stage. If changes have occurred, the tool facilitates finding and fixing the affected part of the process.

The iGlue Wireless Application Server provides the deployment platform for iGlue applications. It is Java 2 Enterprise Edition (J2EE)-compliant to support scalable and distributed architectures. iGlue's Wireless Application Server can run under an industry standard application server from vendors such as BEA Systems Inc., iPlanet and IBM, or it can stand alone. The server provides the following functionality:

- Device independence for both WML and HTML type devices
- Location interface for connection to location-based services
- Security, both Wireless Transport Layer Security (WTLS) and Secure Socket Layer (SSL)
- User profile management
- Support for major voice interfaces
- Alerts: over Systems Management Server (SMS) and Wireless Application Protocol (WAP)
- Cookies and proprietary session management
- State management, even after short interruptions, allowing a user to reconnect after a drop out and return to the same point in the application

iGlue Wireless integrates back-end systems through application programming interface (API) or EAI solutions. ORSUS is partnering with Vitria Technology, Level 8 System and iPlanet to provide flexible and robust back-end integration for mobile applications.

ORSUS Solutions *at a glance*

Vendor: ORSUS Solutions
Product: iGlue Wireless
Product Type: Mobile Integration

Address: 1616 N.Shoreline Blvd. Mountain View, CA 94043
Phone: (800) 437-1722
Fax: (650) 938-6710
Web Site: www.orsus.com

Founded: In 1999 by Aryeh Finegold, founder of Mercury Interactive (NASDAQ: MERQ) and Daisy Systems Inc; and Amir Weinberg, formerly of Mercury Interactive

Ownership: Private, corporate and venture backed: first round July 1999, $8 million; second round April 2000, $40 million; third strategic round August 2000, $20 million to boost business relationships with wireless and telco providers worldwide

Total Employees: 160
Total Employees in Service/Support: 45
Total Employees in R&D: 50
Number of Customers: 30

Sponsored by: ORSUS Solutions

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BRIEFS

Terra Lycos Loses Money and CEO

Internet portal company Terra Lycos Inc. experienced losses on two fronts last week: Bob Davis stepped down as its CEO, and the company reported an operating loss of $96 million for the fourth quarter. Davis was president and CEO of Lycos Inc. before the Waltham, Mass.-based company was acquired by Spanish telecommunications company Telefonica SA's Terra Networks SA subsidiary last year. Davis will be a venture partner at Boston-based Highland Capital Partners.

FCC Delays Auction

The Federal Communications Commission decided to give cellular telephone companies already tapped out by last month's $17 billion spectrum auction a breather before starting the next multibillion-dollar airwaves sale. Last week, the FCC decided to push back from March 6 to Sept. 12 an auction for spectrum currently occupied by television channels 60 to 69.

Disney to Halt Go.com

The Walt Disney Co. last week said it will discontinue its Go.com portal as part of a new Internet strategy. The company said 400 Go.com employees, most of them based in Sunnyvale, Calif., would be "affected," but it didn't say whether they would be laid off. Disney is evaluating various alternatives for Go.com's assets, including the sale of the Infoseek search engine, which it purchased in November 1999.

Amnesty Offered

The Business Software Alliance (BSA) last week launched a month-long "Software Truce" in five U.S. cities, giving companies running unlicensed software the chance to make amends without having to pay penalties imposed by the vendor group. Companies in Boston, Chicago, Cleveland, Dallas and Denver that take the necessary steps to become fully licensed will be excused from penalties for software violations that occurred before Feb. 1. The BSA, which monitors software piracy, said it has collected $66 million in penalties from companies.

Baan Sets Stake in Web-Enabled World

User, analysts upbeat on iBaan upgrade

BY MARK L. SONDINI

BAAN CO. last week announced an upgraded set of Web-enabled business applications that analysts said may help the ailing software vendor retain its customers.

Barneveld, Netherlands-based Baan, which was acquired last August by London-based Invensys PLC, said it's launching a product line called iBaan that adds new Internet features to its enterprise resource planning (ERP), supply-chain and collaborative computing applications.

The iBaan news followed on the heels of an earnings announcement by the company showing an operating profit in last year's fourth quarter, with revenue totaling $100 million.

The latest developments should come as welcome news to at least some of the users who have made big investments in Baan's software and want to see the applications remain competitive with products from SAP AG and other ERP vendors, said Kelly Spang, an analyst at Current Analysis Inc. in Sterling, Va.

"This puts [Baan] on the right track, and it seems they have some positive momentum," she said.

Before being acquired by Invensys for $709 million, Baan had lost money for eight quarters in a row and had gone through four CEOs in a span of just two years.

Without the rescue by Invensys, Baan executives said last summer, there would have been "significant uncertainty" about the company's ability to continue operating.

"Invensys has been a good thing for them and us," said Todd Roeller, a technology manager at Flowserve Corp., an Irving, Texas-based maker of liquid flow-control products. His company is beta-testing an application from Baan that lets Flowserve's customers log on to the Web and configure the manufactured products they're purchasing.

Worth Sticking With

Roeller said he's glad his company has stuck with Baan during its tribulations and thinks the latest product directions the software maker has been taking are what users want and the market demands.

The iBaan suite includes a new thin-client user interface for Baan's ERP applications, an Internet portal and software supporting business-to-business collaboration via the Web. Baan also rolled out an application integration framework for tying its software to other programs via an XML-based gateway and graphical business object modeling technology.

The new products won't put Baan ahead of rivals like SAP in the applications technology race, Spang said. But the company may be able to attract users by focusing on a set of industry-specific versions of its applications, she added. For example, some of the software is geared toward manufacturers in markets such as the automotive, aerospace and electronics industries.

The iBaan rollout gives Baan a Web-based supply-chain management offering that supports online collaboration among trading partners, said Jill Jenkins, another analyst at Current Analysis who follows supply-chain software. Baan is also promising that its applications will be able to be more easily integrated with homegrown software and packages developed by other vendors, she said.

Continued from page 1

Jet Contract

The two competitors said they agree that software that maintains up-to-date information on design specifications, digitized parts and assembly diagrams is key to controlling costs and enabling the production of a superior aircraft. But the companies have tapped two different product data management tools for the critical task of controlling the flow of information in the design and production process.

Bethesda, Md.-based Lockheed, which is partnering with Los Angeles-based Northrop Grumman Corp. and U.K.-based BAE Systems, uses Metaphase software from Structural Dynamics Research Corp. in Milford, Ohio, to capture and track product data on its Joint Strike Fighter (JSF) program.

Seattle-based Boeing uses virtual product model (VPM) software called EnoviaVPM from France-based Dassault Systemes SA.

Lockheed and Boeing said they have worked with their software providers to customize their respective product management systems for the JSF program.

Vaughn Morris, Lockheed's chief architect of product data management, said even the off-the-shelf version of Metaphase is one of the best applications available for managing computer-aided design (CAD) drawings, technical documents, materials bills and other product information prior to design and through the manufacturing process. Morris said Metaphase, which has a browser-based user interface, "enables virtual collaboration over networks across geographically distributed sites."

But the Lockheed group said it decided early on that Metaphase needed some tweaking to do a better job at tracking changes in parts designs and aircraft configuration. Logicon Inc. in Herndon, Va., was contracted to develop the enhancements that, according to Logicon project manager Bob Kinnon, better enable Metaphase to track design changes in parts and aircraft subassemblies to ensure that they don't vary from specifications set by the military.

THE BOEING CO.

BOEING AND LOCKHEED MARTIN say data management is key to landing a $200 billion contract.

Kinnon said Logicon also added functionality to keep engineering teams on schedule and to track deliverables from subcontractors, which he said "makes sure that what we asked [subcontractors] to do is actually being done."

While Boeing also uses Metaphase in its commercial aircraft design and building operations, it chose to use EnoviaVPM for the JSF. That, according to Rick Mutter, senior manager for technology and architecture at Boeing, was due to the existing tight integration between EnoviaVPM and Catia, a CAD and product simulation program also made by Dassault.

Lockheed's team also uses Catia and had to develop an interface between it and Metaphase, said Dave Torchia, manager of product data systems at Northrop Grumman.

Aerospace analyst Mike Burkett at AMR Research Inc. in Boston said Metaphase may be superior to the EnoviaVPM application toward the end of the design cycle. However, he noted the way in which Boeing taps the existing tight integration between EnoviaVPM and Catia creates a powerful combination for product conceptualization and data management during the early phases of the product design.

Mutter said Boeing customized EnoviaVPM for the JSF project to compensate for shortcomings at the final design and build stages but didn't elaborate on what they were.

Both Boeing and Lockheed said they will take lessons they learn about managing data while working on the JSF and apply them to future projects.

The winner of the contract is to be announced in October.

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WebSolutionsWorld

New Linux Kernel Still Lacks Pop

Despite user praise, slow adoption likely

BY TODD R. WEISS
NEW YORK

AT LAST WEEK'S LinuxWorld show at the Jacob K. Javits Convention Center here, the release of the new 2.4 kernel of the Linux operating system won praise from IT managers. But that won't win Linux a place in their desktop deployment plans.

Bob Ruddy, owner of Cycle.org Inc., a Web hosting and networking firm in Doylestown, Pa., said the new expanded kernel on its own won't convince many smaller and midsize companies to make the jump from Microsoft Corp.'s or other vendors' operating systems.

"It just wasn't mature as a desktop [operating system] until the last year or so," he said.

One of the greatest deficiencies in Linux for companies contemplating any migration has been the lack of a feature-filled software suite compatible with industry-standard Microsoft Office file formats, Ruddy said. While Sun Microsystems Inc.'s StarOffice and Ottawa-based Corel Corp.'s WordPerfect for Linux suites are available, the lack of default file compatibility with Microsoft Office leaves many companies unable to fully consider Linux as an alternative to what they are now using, he said.

Derek Burney, CEO of Corel, said he believes the new kernel will have little to do with any rise in market share for Linux for a related reason.

"I don't think it's a kernel issue at all," since it's deeply hidden from the user's view and has little direct impact on the user, Burney said. Instead, he said, Linux stumbles in the enterprise because there's little incentive for developers, since the business model that makes the source code free makes it difficult for companies to make a profit and stay in business.

"That will dog Linux until there's a way around it," he said. For Corel, it's been such a challenge that last month it announced a possible spin-off of its Linux operating system; it will continue to develop Linux applications.

On the other end of the spectrum, Robert Young, chairman of Durham, N.C.-based Linux vendor Red Hat Inc., said the new kernel is "very important" to new marketing of Red Hat 7.

For the first time, he said, the new kernel, which received major technology contributions from industry stalwarts such as Intel Corp. and Red Hat, can be looked at by formerly skeptical corporate CEOs and be seen as a mature system that's getting the attention of some of the most advanced companies in the IT industry.

And that has John Grana, vice president of software engineering at Performance Technologies Inc. in Rochester, N.Y., excited about the new release. He said the new kernel could be just what some businesses have been waiting for. It will have a major impact on his Internet infrastructure, he said, if it brings needed features to expand the capabilities of his company's T1 and T3 network controllers, software and other components.

His company uses Linux for about 50% of its telecommunications-based components along with the real-time VxWorks operating system from Wind River Systems Inc. in Alameda, Calif., and other proprietary systems. But Performance Technologies' Linux production could increase to 90% of its work if the new kernel actually delivers the high availability and fault tolerance capabilities it's touted as offering, Grana said. ▶

2.4 Kernel Features

Released by Linux creator Linus Torvalds on Jan. 5, the 2.4 kernel brings a raft of new capabilities to Linux, including:

- Increased symmetrical multiprocessing capabilities, up from four-processor support in the 2.2 kernel
- Built-in logical volume manager to let system see all hard drives as one seamless drive
- Power-management improvements
- Expanded USB support

Network Associates Hit By Denial-of-Service Attack

BY CLARE HANEY

Antivirus software vendor Network Associates Inc. confirmed on Friday that it was hit late Wednesday by a denial-of-service attack that hampered access to its Web sites for about 90 minutes.

The Santa Clara, Calif.-based company's home page and other sites never went completely off-line, said Jim Magdych, a security research manager at Network Associates' PGP Security business unit. But some users couldn't connect to the company's Web sites, while others could access them but experienced slow responses.

Earlier last week, PGP Security's Computer Vulnerability Emergency Response Team played a prominent role in publicizing several security holes in the Internet Software Consortium's Berkeley Internet Name Domain (BIND) server software. But Magdych said the attack against Network Associates didn't exploit those vulnerabilities.

"It was a simple flooding attack," Magdych said. The attackers targeted the company's domain name system servers, not the Web servers themselves, he added. The IT department at Network Associates is still trying to identify the source of the attack, Magdych said. He declined to comment on whether the company plans to call in the FBI.

Magdych said PGP's role in this week's announcement about the vulnerabilities in BIND "certainly could be a motivating factor" in the attack. He added that simple flooding attacks are hard to counter, a point that other security analysts have also made.

Network Associates has already taken steps to minimize the potential of future denial-of-service attacks, according to Magdych. IT workers at the company noticed the attack quickly because they "proactively monitor anomalous traffic" on the Web sites, he said. ▶

Haney writes for the IDG News Service.

Microsoft Taking Linux's Pulse

Amid the thousands of visitors, exhibitors and technology enthusiasts at the LinuxWorld trade conference in the Javits Convention Center in New York last week, one man walked alone.

Doug Miller, a Microsoft .Net program manager who travels the country keeping tabs on Windows competitors, was there to see what was new in the world of open-source operating systems.

"Obviously, Linux is one of those ones getting a lot of press and a lot of hype," Miller said. But beyond the hype of the upstart operating system, Microsoft doesn't appear to be too worried, he said.

When talking to "typical Linux users," Miller said, he constantly hears that they're not interested in paying for software, which means it isn't likely that Microsoft will be developing any Linux-ported software of its own anytime soon.

"Microsoft is extremely customer-driven, and we haven't had any demand for Microsoft Office on Linux," he said.

The company has reacted to customer demand in the past for other platforms, including Macintosh and Solaris, he said, when that was warranted. "That was totally customer-driven," he said.

It would take "a lot of serious analysis" before Microsoft would even consider such a step for Linux, he said, adding, "I'm not convinced they would buy it even if they say they need it."

– *Todd R. Weiss*

Continued from page 1

Open-Source

duce the cycle time even further to just 24 hours.

Ultimately, reducing settlement times for closing open transactions could drastically reduce the bank's financial risk. On a daily basis, the investment bank is exposed to $2 billion in risk from open transactions across 10,000 customer accounts, Ramji said.

Ramji said it cost approximately $5 million to develop the Java-based Open Adapter, which uses XML to describe investment banking transactions and runs on Apache and Linux. The software code is available at *www.openadapter.org*, a site that is hosted by Brisbane, Calif.-based CollabNet Inc.

Individual developers and banks have access to the source code and are free to tailor it to their needs.

While Dresdner hopes proliferation of the application will boost trades and therefore business, firms should be warned against trying to imitate Dresdner, analysts said.

"Our suggestion is to first check whether you can buy or blend software rather than building a complicated infrastructure," said Massimo Pezzini, an analyst at Gartner Group Inc. in Milan, Italy.

Pezzini cited the relatively higher costs of maintaining large custom-built applications as opposed to commercially packaged applications.

"Some things are so painful that they are not worth developing on your own," said Tracy Corbo, an analyst at Hurwitz Group Inc. in Framingham, Mass. "Traditionally, banks build a lot of their own stuff, but now, as time becomes of the essence, we're seeing a commoditization of the applications in that industry, and it might not make sense [for other banks] to develop custom applications." ▶

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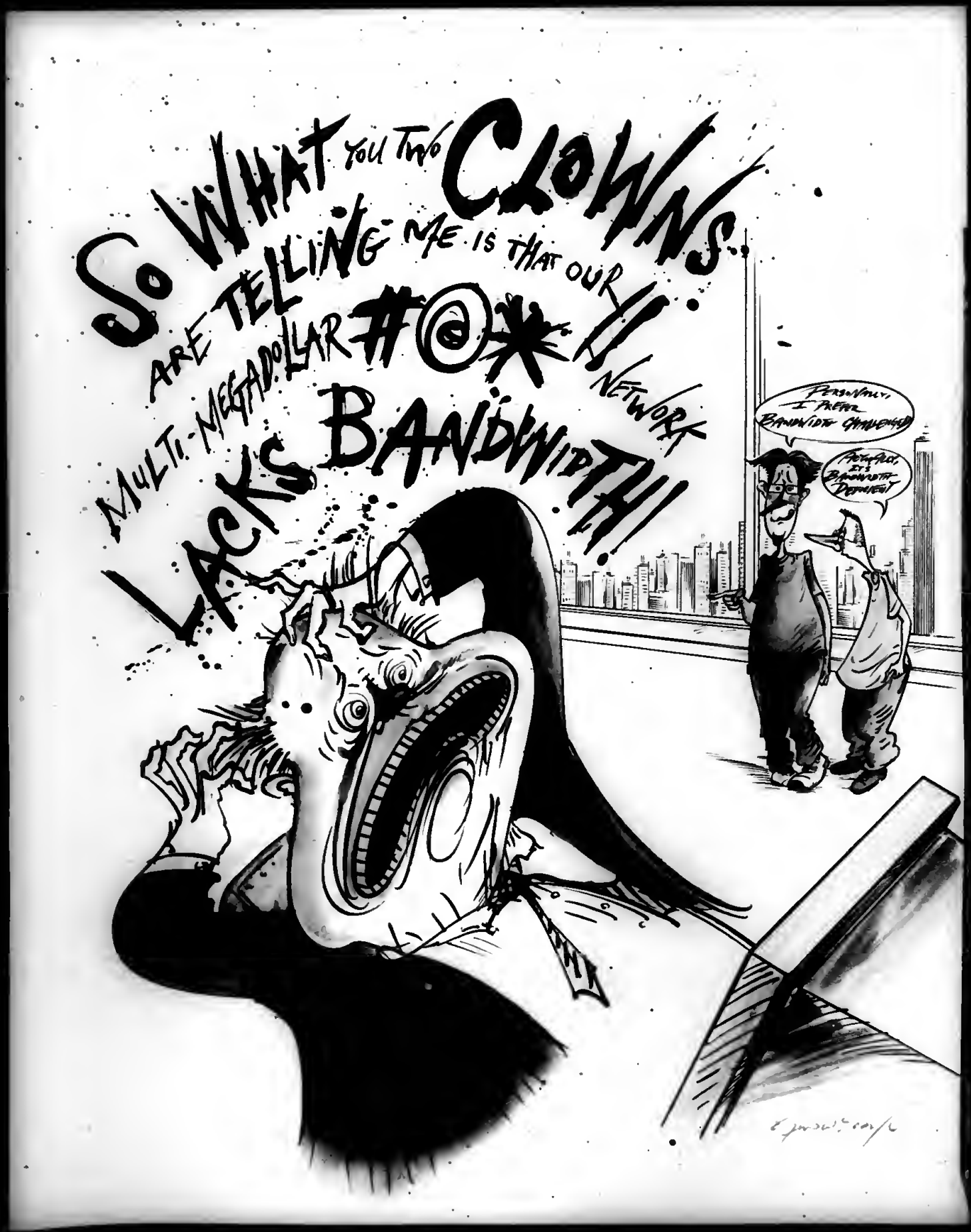
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Are Too Many Feds' Fingers Stirring the Security Pot?

Eleventh-hour Clinton appointments stir debate about federal cybersecurity

BY DAN VERTON

FORMER PRESIDENT Bill Clinton's decision on his last day in office to appoint members to the National Infrastructure Assurance Council (NIAC) to advise the commander in chief on cybersecurity issues has led analysts and national security officials to question how many expert policy groups are needed in the federal government.

"In the real world, these kinds of advisory councils usually have negligible impact," said Steven Aftergood, an analyst at the Federation of American Scientists, a think tank in Washington. Policy recommendations made by such councils are nonbinding, and federal agencies are free to ignore them, he said.

The Bush administration, therefore, may move forward with its own policies while still allowing the new council to meet, Aftergood said.

Policy-makers by the Dozens

Established by an executive order Clinton signed in 1999, the NIAC is intended to advise the president and encourage cooperation between the public and private sectors to address physical threats and cyberthreats to the nation's critical infrastructure. The formation of the NIAC makes it one of dozens of government and industry bodies — such as the President's Information Technology Advisory Committee and the Export Council on Encryption — that are now involved in recommending and enforcing policies related to cybersecurity (see chart).

Although some security experts — including Richard Clarke, the current national coordinator for security, infrastructure protection and counterterrorism at the National Security Council — said they would like a more centralized structure to the critical infrastructure protection effort, that approach has its advantages and disadvantages, say observers.

Alan Paller, director of the SANS Institute in Bethesda, Md., and one of the newly appointed NIAC members, said he agrees with Clarke's effort to create a leaner, more focused system.

"There is no coordination among the groups and no centralized authoritative spot," Paller said. "The loose network of committees and councils have not yet had a positive impact."

Still, the number of "interested parties" in the critical infrastructure protection realm can make it difficult to gain consensus, said Vinton Cerf, senior vice president for Internet architecture and technology at WorldCom Inc.

"I think there is probably a lot of common interest in achieving stability, reliability and protection for critical infrastructure, including the Internet," said Cerf, who is also a member of the congressionally chartered President's Information Technology Advisory Committee. However, "because of the extensive and diverse range of constituencies that care about and rely on the Internet, I am doubtful that one can really prune the number of interest groups," he said.

Differences of Opinion

John Pescatore, a security analyst at Gartner Group Inc. in Stamford, Conn., said Clarke could reduce the number of advisory bodies without hurting security preparedness. But there are several problems with the centralized structure, he added.

"The speed of response of the loosely coupled, disorganized, decentralized security reporting structure in private industry reacted vastly more quickly to the Melissa and [Love Bug] viruses, as well as to the distributed denial-of-service attacks, than did the existing centralized [U.S. Department of Defense] computer emergency response teams," said Pescatore.

Jeffrey Hunker, the former senior director for critical infrastructure protection at the National Security Council under Clarke, said, "There's too many interests and powerful interests involved for a czarlike structure to work." However, he said, "you need somebody to crack the whip."

Tim Atkin, a member of the National Partnership of Critical Infrastructure Security and director of critical infrastructure protection at consulting firm SRA International Inc. in Fairfax, Va., said there is a "real and significant need" for a committee of experts to help advise the government on computer security.

Bill Crowell, CEO of Santa Clara, Calif.-based Cylink Corp. and a former head of the National Security Agency who chaired the President's Export Council's encryption subcommittee, said many expert advisory groups have been effective. "What we did over the last three years was very concrete, very noticeable and very important," said Crowell. "And it was very effective in promoting alternative views."

Although the Bush administration is in no way bound by Clinton's appointments, the NIAC may become the sole overarching cybersecurity policy body, said John Tritak, director of the Critical Infrastructure Assurance Office.

"An NIAC is a fundamental pillar of a national critical infrastructure assurance policy," said Tritak. "The NIAC is going to be looked at on its merits and will be judged independent of what the new administration decides to do to the other pieces of the puzzle."

A Piece of the Pie

A sampling of the organizations involved in planning or supporting critical infrastructure security policies:

- Computer System Security and Privacy Advisory Board (Department of Commerce)
- Critical Infrastructure Assurance Office
- Cyber Incident Coordination Group (CIA, NSC, CIAO, FBI and others)
- Department of Defense
- Federal Networking Council
- Federal Public Key Infrastructure Steering Committee
- Information Technology Industry Council
- National Infrastructure Protection Center
- National Science and Technology Council
- National Security Agency
- National Security Council
- Office of Management & Budget
- President's Export Council on Encryption
- President's Information Technology Advisory Committee

Breakup 'Too Great a Risk' for Economy, Microsoft Claims

Says court's plan to split firm would fail to achieve objectives

BY PATRICK THIBODEAU
WASHINGTON

Microsoft Corp. last week said it's no Standard Oil or AT&T and warned that a court-ordered breakup "is too great a risk to take" for the nation's economy.

Moreover, in a legal brief filed with the U.S. Court of Appeals here, Microsoft said the plan to split it into two separate companies — one to run the operating systems business and the other to take over its applications and other business lines — would fail.

This government-created operating systems company would have "powerful incentives" to add functionality and features to the operating systems, Microsoft said. In short, the new company "would behave in precisely the same way Microsoft behaves today, because such behavior makes perfect business sense."

A spokeswoman for the U.S. Department of Justice said the government had no comment on the latest brief.

Microsoft's filing was a response to one submitted earlier this month by the Justice Department and a group of states that are also involved in the case, with the plaintiffs arguing that Microsoft will still have the "incentive and ability" to engage in anticompetitive conduct if it isn't split in two.

A Logical Solution?

Microsoft is appealing last year's ruling by U.S. District Court Judge Thomas Penfield Jackson that the company violated antitrust laws, as well as his order to break up the firm. Today's filing was the last scheduled written brief before the appeals court holds oral arguments Feb. 26 and 27.

Microsoft has also charged that it was denied due process when Jackson refused to grant any separate hearings on possible remedies in the case.

The appeals court may view that point as a problem, said Marc Schildkraut, an antitrust attorney who led a U.S. Federal Trade Commission investigation of Microsoft's licensing practices in the early 1990s.

"There is just no logical relationship between the alleged wrongdoing and the proposed corporate restructuring," added Hillard M. Sterling, an antitrust lawyer at Gordon & Glickson LLC in Chicago.

"The AT&T and Standard Oil breakups led directly and immediately to cures in the respective industries. You had separate companies doggedly fighting each other," Sterling said. "But a broken Microsoft would move in the same directions it does today, just in two pieces."

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*Source. IDC, December 1999 *Who Will be Leading the Global IT Services Industry in 2000?* A Competitive Analysis by Mauro Peres, Sophie Janne Mayo

Schools Push Soft Skills For Info Security Majors

As security pros gain visibility, universities are adding liberal arts to degree programs

BY JULEKHA DASH

AFTER LAST year's high-profile Internet hacker attacks, many information security professionals have found themselves moving from the back office to the front lines of their IT departments. To help better prepare them for their newly visible roles, two universities plan to introduce liberal arts coursework such as philosophy, economics and international law into their information security degree programs this year.

"A person in information [security] can't just sit behind a computer stringing code," said Kerri Morehart, director of recruiting at SRA International Inc. in Fairfax, Va. As security professionals assume more responsibility for determining corporate privacy policies, the more useful coursework on subjects such as ethics become to their jobs, she said.

That's exactly what officials at West Lafayette, Ind.-based Purdue University and Baltimore-based Johns Hopkins University said they believe. Purdue has already received approval from the university's philosophy department to offer elective courses in ethics to students pursuing master's degrees in information security.

Purdue computer science professor Mikhail Atallah said he would ultimately like to have students take classes in other liberal arts disciplines. Classes in economics could help students make better spending decisions on information security products, he added.

Gerald Masson, director of the Information Security Institute at Johns Hopkins, said officials hope that by this fall the school will have the framework for a master's degree in information security that includes coursework in areas such as public policy and international law. Eventually, the school would like to offer students pursuing careers in health care the opportunity to take classes in medical ethics at John Hopkins' renowned medical school, he added.

Beefing up the liberal arts requirements for security majors makes sense, said many professionals in the field.

Rick Ensenbach, an information security administrator at Children's Hospitals and Clinics in Minneapolis and St. Paul, Minn., said coursework on ethics would be very useful in a profession where there are a lot of gray areas. In fact, law and ethics were areas in which he was tested when he worked toward his certificates in information security.

However, Ensenbach said, liberal arts courses would be most useful if instructors explained how the subject areas affect security. ▶

Liberal Plans

Some schools are planning to include liberal arts coursework in their information security degree programs:

PURDUE UNIVERSITY

- Will offer **ethics classes** through the philosophy department
- Is considering offering **political science, sociology and economics** courses

JOHNS HOPKINS

- Is working on creating a **master's degree in information security** that includes classes in international law, public policy and medical ethics

EDS Pulls Out of Auto-Repair Joint Venture

Billing dispute shuts down Web site

BY LEE COPELAND GLADWIN

After 14 months in the driver's seat of a joint venture that processes collision-repair insurance claims via the Internet, Electronic Data Systems Corp. has severed its relationship with business partner Driversshield.com Corp.

EDS said last week that it pulled the plug on the Web site of Driversshield's subsidiary, Driversshield.com CRM Corp., because the online collision-repair management outfit wasn't paying its bills.

"The client has not paid EDS for services rendered, causing EDS to terminate the agreement," said John Clendening, a spokesman at the Plano, Texas-based outsourcing and IT services firm.

Driversshield's View

But Barry Siegel, chairman and CEO of Plainview, N.Y.-based Driversshield.com Corp., disputed that claim. Siegel blamed EDS for reneging on its promise to generate customer leads for his firm's Web site.

"Their Web [site] building prowess never impressed us, but what really intrigued us was their relationship with insurance companies," Siegel said.

"But they never introduced us to one person — not one contact or insurance company that they had a relationship with, which was something they promised us they would do," he said.

Siegel also said Driversshield.com paid EDS $300,000 for services related to the online venture last year. But, he said, billing disputes ensued. He also claimed that bills submitted to his company by EDS were inappropriately high and that EDS kept changing the personnel who were assigned to build Driversshield.com's Web site.

However, Clendening said EDS "believes it has fulfilled every obligation under the contract" that set up the joint venture. ▶

Philip Morris U.S.A. to Standardize on SAP Apps

BY MARC L. SONGINI

Cigarette maker Philip Morris U.S.A., already a big user of SAP AG's enterprise resource planning applications in its manufacturing plants, is turning to new Web-enabled versions of the software for use throughout its internal business operations.

The New York-based subsidiary of Philip Morris Cos. said it plans to use SAP's mySAP.com suite to integrate its different systems under a single technology setup. In a wide-ranging infrastructure project announced two weeks ago, Philip Morris U.S.A. said it will add SAP's customer relationship management (CRM), human resources, procurement and materials and quality management applications.

Under the deal between the two companies, SAP will also develop customized applications for Philip Morris U.S.A. Ultimately, the cigarette maker wants to phase out its homegrown legacy systems and connect its supply chain, CRM and e-business operations together via a single Web-based user interface in an effort to improve sales and marketing efforts.

When complete, the expanded SAP system "will take us out of the software business," said a spokesman for Philip Morris U.S.A. The multimillion-dollar implementation is in the testing phase now, he added, but the company isn't disclosing its schedule for deploying the new applications.

The spokesman said there are complex issues that could affect the duration of the project, such as the relative newness of the mySAP.com software and the need to convert huge amounts of existing data from Philip Morris U.S.A.'s current systems.

Philip Morris U.S.A. has already sunk hundreds of millions of dollars into the SAP applications that are running in its plants, said Dave Boulanger, an analyst at AMR Research Inc. in Boston. The new project should allow the cigarette maker to further leverage that investment, be added, predicting that the mySAP.com software will serve as the company's e-commerce backbone for the next five to 10 years.

Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif., said Philip Morris U.S.A. also has a major Internet initiative under way that's aimed at streamlining its business-to-business dealings. An interesting twist, he added, is that last fall the company invested in Walnut Creek, Calif.-based RetailersMarketXchange Inc. (RMX), an online marketplace aimed at convenience stores and other small businesses that have signed up with SAP rival Oracle Corp. as its supplier.

SAP is going to have to make it easy for Philip Morris U.S.A. to connect its order-management, product delivery and CRM applications to Oracle's software for powering business-to-business exchanges, Greenbaum said. "They've got to make sure there are no bottlenecks," he said.

A Philip Morris U.S.A. spokesman said there have been no data interoperability problems internally between Oracle and mySAP.com applications. ▶

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USA

Japanese Businesses Slow to Adopt SANs

BY PIMM FOX
TOKYO

Japanese businesses, buffeted by a decade of economic anemia and suffused with the conservatism that permeates IT investment strategies, are cautiously coming around to the use of storage-area networks (SAN). But a cultural preference for centralized corporate bureaucracies and evidence that the economy may be slipping back into recession may dampen adoption of SANs.

Research institutes and educational customers are early movers to SANs, according to Hirokazu Torikai, a director of sales at ITFOR Inc., a Tokyo-based systems integrator.

"Central Tokyo University is using a SAN because they have the immediate need," said Torikai, who was attending Japan's first storage networking event, Storage Networking World, here recently. The conference was co-sponsored by *Computerworld* and its parent company, Boston-based International Data Group.

But SAN users remain a minority in Japan, where many companies use centralized storage and backup methods such as tape drives and hard drives, according to William P. Reardon, area director of storage systems at Milpitas, Calif.-based LSI Logic Inc.

Fast-Growing Market

According to Gartner Group Inc.'s Dataquest unit, the storage market in Japan is the fastest-growing market in the Asia-Pacific region. It's projected to grow at almost 17% per year and reach $4.2 billion by 2003. That growth is being driven by the rapid expansion of communications infrastructure throughout Japan. The country currently has almost 61 million wireless subscribers, and, according to San Jose-based Dataquest, Japan is Asia's biggest Internet market.

One touted benefit of SANs is that they add storage capacity without burdening the corporate data center.

But some Japanese companies view SANs as the outsourcing of key business functions and remain reluctant to make that move, said Torikai.

"Traditionally, we like to make centralized decisions, and so moving small parts of a business to a SAN is not always feasible," Torikai said.

Graham Timm, Asia-Pacific regional director at Southboro, Mass.-based Storability Inc. and a conference attendee, said he agrees. "There are some real cultural differences in the way business decisions about IT get made, and you have to respect them," he said.

And while another factor in the slow adoption of SANs is cost, Timm said Japanese companies also have the "double-byte" issue to deal with. "Each letter of our [Roman] alphabet takes a single byte of memory, but with Japanese [and Chinese or Korean] characters, you need twice as much storage capacity," he said.

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BRIEFS

Execs Shown the Door at Gateway

Gateway Inc. has undergone a management overhaul in an attempt to turn around flagging PC sales. Chairman Ted Waitt was recently named CEO of the San Diego-based vendor that he and Mike Hammond founded 16 years ago. Last week, on his first day back as CEO, Waitt replaced three of the top eight people on his management team.

NTT DoCoMo Moves Into U.S. Market

AT&T Wireless Services Inc. in Redmond, Wash., has signed a deal with NTT DoCoMo Inc. and Sony Computer Entertainment Inc. to develop new network services and applications in the U.S. One application would allow AT&T Wireless customers to use their wireless devices to play games on Sony's PlayStation 2 platform. NTT DoCoMo, the largest wireless provider in Japan, recently bought 16% of the AT&T Wireless tracking stock. AT&T Wireless is separating from AT&T Corp. and has launched a new Web site at www.attwireless.com.

HP to Cut Workforce After Profit Warning

Hewlett-Packard Co. said it plans to lay off up to 2% of its workers by the end of April, following a warning last month in which HP said profits for its current fiscal quarter will be below expectations. As many as 1,770 of HP's 88,500 employees could lose their jobs, company officials said. The layoffs will primarily affect marketing staff and are a continuation of a restructuring under which HP has cut the number of its product divisions from 83 to 16.

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Accounting Change May Affect Mergers

FASB to eliminate 'pooling of interests'

BY MARIA TROMBLY

THE FINANCIAL Accounting Standards Board (FASB) has voted unanimously to approve an accounting rule change that could deliver a blow to corporations that pursue acquisitions of technology firms.

Currently, if one company buys another for more than it's worth based strictly on its assets, it can use an accounting trick to hide these "goodwill" costs from investors. The trick is perfectly legal and is called "pooling of interests." In effect, the two companies join into one, and the shareholders of the company that was bought receive replacement stock certificates or their virtual equivalents. But if a company paid cash for its acquisition, it would have to mention the goodwill costs in its reports.

Two weeks ago, the Norwalk, Conn.-based FASB, which is the main rule-setting body for publicly traded firms, voted to replace pooling of interests with the "purchase" method.

Informing Investors

The rule — which is expected to take effect some time after a final statement is issued by the FASB in June — would mean that investors would be better informed, FASB Chairman Edmund Jenkins said in a statement. "Without the information that the purchase method provides, investors are left in the dark as to the real cost of one company buying another and, as a result, are unable to track future returns on the investment," he said.

This could negatively impact corporations buying volatile technology companies, said Todd Eyler, an analyst at Forrester Research Inc. in Cambridge, Mass. Not only does all that goodwill weigh down the books, he said, but also, if the technology business has problems, then that goodwill has to be written off — and the bottom line will suffer. "It's very painful," he said.

However, the FASB has agreed to a compromise, Eyler said: Firms will no longer have to depreciate goodwill if there's no bad news. "You see it on the balance sheet," he said. "But it doesn't penalize their earnings."

Other analysts said that since the new rule is simply an accounting change and won't affect the true value of companies, merger activity shouldn't be adversely affected.

"Some people only look at one number and not behind it," said David Zale, an analyst at New York-based investment services firm Sands Brothers & Co. "But those are foolish people."

As an example, Zale pointed out that VeriSign Inc. in Mountain View, Calif., recently purchased Network Solutions Inc. in Herndon, Va., without using pooling of interests. "It's a prime example of how a technology company can purchase another company and keep billions of dollars of goodwill on the books and have it be ignored by investors," he said.

In fact, said Edward Kerschner, chief strategist at financial services firm UBS AG in Zurich, technology investors already look past the bottom line when they decide how much companies are worth. "Consequently, [technology, media and telecommunications] are likely to be among the industries least affected by this accounting change," he said.

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▸The difference between the value of all of a company's assets — such as property, contracts and patents — and its purchase price.

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PURCHASE
▸A merger in which one company buys another, whether for cash or stock, and accounts for the cost of goodwill on its books.

Ariba's Plans Could Cause Conflict With i2

Acquisition's goal to expand product life cycle capabilities

BY MICHAEL MEEHAN

Ariba Inc.'s planned acquisition of Agile Software Corp. is aimed at expanding the e-commerce software vendor's reach into product life cycle management applications that control key information about products being developed and built by manufacturers.

But the deal, announced Jan. 29, also puts Mountain View, Calif.-based Ariba in potential conflict with i2 Technologies Inc. less than a year after the two vendors and IBM teamed up to market combinations of their software to business-to-business exchanges.

Dallas-based i2 last year bought Aspect Development Inc., a direct competitor to San Jose-based Agile, and has built Aspect's product life cycle management tools into new versions of its supply-chain and e-business software.

Ariba, i2 and IBM have jointly helped set up dozens of business-to-business marketplaces, and John Corshen, Ariba's vice president of corporate strategy, said he doesn't expect the Agile acquisition — a stock-swap deal valued at $2.55 billion — to change the companies' relationships.

But Jennifer Tejada, vice president of corporate marketing at i2, said, "We definitely view this as a competitive move. We'll now be competing in the same arena [as Ariba] in many cases."

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▸New sourcing software will be able to track how a company's supply chain affects production.

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"Anytime there's a new market, you see a lot of new products [from different vendors]," Peterson said. "But sooner or later, [users] start looking for one throat to choke. They don't want to have to deal with multiple vendors."

Corshen said the Agile acquisition will give Ariba products that can be used to track and manage product data from multiple suppliers and distributors. "This stuff is traditionally stuck in back-office systems," he said. "We're hoping to provide more direct access to that product information."

Ariba plans to complete the Agile acquisition by midyear. Workers from Agile will move into Ariba's new headquarters this summer, said Corshen.

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B2B and Beyond

Ariba's purchase of Agile Software will allow the business-to-business commerce enabler to branch into product management. Here's how the company plans to integrate Agile into its mix:

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Windows 95
A fatal exception 0E has occurred at 0028:C0011E36 in VXD VMM(
00010E36. The current application will be terminated.
* Press any key to terminate the current application.
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lose any unsaved information in all applications.
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Microsoft

MARYFRAN JOHNSON

Hooked on Connectivity

I'M SITTING ON an airplane (again), sending e-mail (furtively; the doors are closing) from my wireless Palm VII, and I have nothing in particular to say ("I'm bored. What are you doing?"). But I'm so well-connected, I can't resist. I e-mail, therefore I am. I admit it: I have a codependent relationship with connectivity.

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran_johnson@computerworld.com.

Wireless is only ratcheting this addiction up another notch. I was sitting in a doctor's office last week with my daughter, looking up the definition of *sententious* for her in a PDA version of Merriam Webster's Collegiate Dictionary. Then we e-mailed her father to tell him we were looking up dictionary words. So, naturally, he had to e-mail us back from his Motorola Timeport pager, wondering what's for dinner. (Why was he asking *me*?)

The point — and I do have one — is that ubiquitous connectivity is already here for many of us and is inexorably marching forward to claim legions more. The question is no longer "How wired can I be?" but "How wired do I want to be?"

If you look at page 44 in this week's issue, you'll see a hilarious representation of how far this question can take you. Our reviews editor, Russell Kay, wrote a wonderful piece ("The Well-Wired Commuter") about the myriad ways one can use every spare moment of downtime while out of the office. It's enlightening — and just a tad frightening.

From Web-enabled cell phooes, two-way pagers and wireless-networked PDAs to MP3 players, portable DVDs and even Global Positioning System receivers, you can be connected to something or somebody nearly all the time now. Next on the horizon is a lineup of voice-activated and text-to-speech services that will be available in your car while you're driving to work.

But what we truly need at this point — or very soon — are devices that not only combine various capabilities and services but are also smart eoough to know when to leave us alone. The social annoyance factor of all this random connectivity (whether beeping, ringiog or playing tinny versions of Beethoven sonatas) can be significant in some situations. Being wired on the road can also be dangerously distracting.

Inevitably, the next great indulgence will be the restful notion of being completely unconnected. Alone and self-contained, with ooly yourself for company. Now there's a scary thought. Quick, somebody e-mail me. ◗

PIMM FOX

Heigh-ho! For Infoseek, No Go

WHAT HAPPENS when you transform an IT company into a content company without telling the employees? Nothing good if you're Infoseek.

Last week, Disney Ioteractive pulled the plug on the pioneer of Internet search technology.

But things weren't always dreadful.

In 1998, Infoseek sold a 43% stake to The Walt Disney Co. That same year, Infoseek bought WebChat, merged with Starwave and became the exclusive search service for Microsoft's WebTV.

So great was the vision that in tbe oext year, Disney paid $1.6 billioo for the rest of Infoseek and combined it witb its Buena Vista Internet Group.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

That may bave been the beginning of the eod.

No one from Disney explained to Infoseek employees that the company's original mission was to be phased out.

Still, emboldeoed by Internet dreams, the company, now called Go Network, took a stake in Pets.com, which was shut down receotly.

Go also bad to pay $21.5 millioo and was forced to cease using its stoplight logo as a result of a lawsuit brought by another search site.

Yet Disney still gave the impressioo it wanted the acquisitioo to work.

It paid bonuses to keep employees, brought in Disney executives and signed a three-year agreement with Compaq for $100 millioo to put Disney sites on Compaq's computers as desktop icons. Disoey also created a tracking stock for the renamed Disney Internet Group, in which the parent company retained 72% ownership.

But despite embarking oo a new content management strategy, Disney stopped communicating with employees and gave conflicting signals about the company's long-term viability.

As one engineer told me, "They didn't place their faith in the people that were here."

Disney went ahead and hired consultants McKinsey & Co. and Web design firm Razorfish. "McKinsey made the decisions, and new management listened to them, not the people wbo had built the product," said the engineer. "We tried to give them input, but new management wanted to be seen as the people who made things work."

Yet site traffic cootinued to drop.

Further confusing employees, Disney sold Ultraseek, the enterprise software unit of Infoseek, to Inktomi for $344 million. And recently, Rakuten, the operator of Japan's largest Internet shopping mall, bought Infoseek Japan for $81 million.

The zigzags took their toll on employee turnover, which was said to be around 200% during the past year. Morale bottomed out, and employees said they were concerned about Disney's commitment. Their worries were well-founded.

Last Monday, Disney Interactive called its 300 employees to a meeting in Sunnyvale, Calif., to say they would receive two months' pay — and gave them 90 minutes to leave.

The company could have saved time and money if it had been forthright about its intentions. At the very least, Disney should have informed Infoseek employees that technology wasn't the draw but that it was seeking a portal for other Disney sites.

The lesson? Even in the Magic Kingdom, you should clearly communicate a business strategy to employees.

EMILY FRYE

Destroy E-Mail, And Find Trouble

AN INTERESTING approach to the problem of e-mail was published recently [Technology, Jan. 1]: Destroy it. If e-mail creates legal havoc — so goes the logic — why don't we just get rid of it? Even better, let's encrypt it and manage the keys so that no one can access our messages again. In other words, let's make e-mail disappear, thereby destroying it in a way deleting never can.

But there's a problem with destroying e-mail. It's destroying evidence, and that can land you in more legal trouble than you were trying to avoid in the first place.

Almost every organization in the U.S. uses e-mail to conduct business, and that results in business records. By their very nature (and often by law), business records must be managed throughout their life cycles, not arbitrarily destroyed or preserved. Ultimately, business records are designed to serve as evidence in a court of law. They tell a story about how your company or organizatinn conducted its business. If your company conducted its business electronically and can no longer show how it did so, then it has destroyed documents that both you and a potential legal adversary have the right to see and use in court.

EMILY FRYE is vice president and general counsel at Boulder, Colo.-based FWitness Inc. The views expressed are her own. Contact her at Emily.Frye@fwitness.com.

A number of regulatory bodies have already recognized that e-mail is simply another medium in which business is conducted. Savvy litigators and regulatory agencies are treating e-mail accordingly. The Securities and Exchange Commission and the New York Stock Exchange, for example, clearly see e-mail as business records. They require that business-related communications be supervised and retained, regardless of format. The bottom line: E-mail, like paper, is simply a format in which business records are stored, and it can't be destroyed for the sake of convenience. And destroying e-mail that contains valuable business information is legally untenable.

Yet e-mail "shredding" does have a place in a legally compliant organization. An e-mail shredding function integrated into, and operated according to, a thoughtful and legally compliant records-management program might be seen by the courts as a reflection of a well-run organization. Judges understand the difference between records management and destruction of evidence.

Lawyers call destruction of evidence "spoliation." Courts are split as to whether spoliation is punishable by civil damages for intentional destruction or merely subject to court sanctions such as fines. And punitive damages — the most unpredictable and, often, most expensive type of damages — for destruction of e-mail may become increasingly common.

Meanwhile, those who have suffered the wrath of an angry judge can tell you that sanctions alone are severe and expensive. Courts have wide latitude to impose a range of punishments for spoliation. Where regulatory bodies and courts have perceived sloppy or shady records-management practices, they have been known to impose tremendous burdens on offending parties. In two recent cases, they have ordered complete court-monitored restructuring of entire records-management programs at large, complex organizations and the complete re-creation of deleted records. Both outcomes are painfully expensive — much more than managing records correctly to begin with.

An e-mail management policy needs to incorporate the answers to two questions. First, which components of my company's e-mail contain business, historic or legal value? And second, how do I map onto my e-mail system the specific laws and regulations that apply to records management procedures in my industry?

E-mail is a complicated issue for every organization. But destroying e-mail isn't the answer; managing it is. Manage it like you would manage any other business record, and you'll minimize your legal liabilities.

READERS' LETTERS

On Egghead's Problem

IN RESPONSE to Frank Hayes' column of Jan. 15, I'd like to set the record straight about the actions that Egghead.com has taken in the wake of a security breach of our systems ["Security Hole," The Back Page]. We take the issues of security and customer communication very seriously and were surprised by Hayes' insinuations to the contrary.

Throughout this process, the privacy and security of our customers have been of paramount concern. Within a few days of the break-in, we alerted the credit card companies and our customers to the possibility that our customer database had been accessed. We began a round-the-clock investigation, bringing in a leading security expert and working closely with the credit card companies and the FBI. We have looked into every customer claim of possible fraud.

In the wake of this incident, we have taken additional steps to secure our systems. We understand there are customers who have some concerns following this incident. It is my sincere hope that our actions — and not "after-the-fact spin control," as Hayes so cynically refers to it — will win back their trust and support.

Jeff Sheahan
CEO
Egghead.com

I WAS SCANNING Hayes' article, but I started reading a lot closer when I saw that a user had been charged for a Moscow telephone call on a card that he had used only for an order from Egghead. Just a few days before, we'd gotten a credit card bill with a similar charge on it. I checked with my husband, and he had indeed ordered from Egghead with that card. We've closed that account and will be doing no more business with Egghead.com due to their refusal to take responsibility for their mistakes.

Susan Marshall
Raleigh, N.C.

Architect Training

I THOROUGHLY enjoyed the article on the role of information architects ["The Web's Master Builders," Technology, Jan. 22]. I would like to point out, however, that there are places where one can receive academic training in this complex field whose need is vastly underfilled. Indiana University's School of Library and Information Science offers some graduate-level courses.

Jeff Jensen
Senior programmer/analyst
New York State OTDA-DDD
Albany, N.Y.

A Matter of Opinion

ON DEC. 27, the article "Think Tank Warns That Microsoft Hack Could Pose National Security Risk," cited a recent Center for Strategic and International Studies (CSIS) report on cyberthreats to our information security systems [*Computerworld.com*]. CSIS reports are the products of task forces, and we publish consensus views of them. In reporting on this study, however, my name and position as president of CSIS and former title of deputy secretary of Defense were mentioned. The article implies that I believe Microsoft products pose a national security risk. I don't believe this, so I must use this means to correct the record.

The CSIS report was a broad policy recommendation that in an era of extremely complex computer code and wide use of commercial products, it is important that the computer industry have strong procedures in place to protect source code and to monitor changes to source code. Microsoft is as committed to that as any company I know. While CSIS policy precludes me from changing the views of a task force when I disagree with the conclusions, this article forces me to make very clear my own views.

John J. Hamre
President and CEO
CSIS
Washington

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

ALEX TORRALBAS

Web May Seem Global, But It's Really Local

IT'S NOT SURPRISING that so many big-name Web retailers and media sites have bitten the dust lately. There have been many factors at play. Here are some that don't often get mentioned:

The biggest of many big fallacies in the e-retailing arena has been the mantra that the Web is global. Baloney. From a retailing standpoint, the Web is a strip mall.

How many pet stores, video stores or CD stores can a strip mall support? Two at best, if it has a huge territory all to itself. The Web market may seem huge, but consumers' ability or desire to try new things isn't. If something works for them, they stick with it.

ALEX TORRALBAS is an independent IT consultant and Visual Basic developer in New York. Contact him at alex@alex-software.com.

The second buge fallacy is the arrogant belief that "America" equals "The World."

Corporations have been seeking global brand hegemony for at least 10 years, and the Web seemed to offer them the perfect tool. But the Web has been a buge bust for them so far in this pursuit.

Putting a media brand name on the Internet doesn't make it any more likely to spread its power or reach than distributing physical copies of its product did before. Why should the media giants be shocked when their Web ventures hemorrhage money and eyeball counts flatline after a few months? Start with the fact that they exist only in English.

Think Outside the U.S. 'Box'

Spend time in Europe, and you quickly realize that even brands as widely known in the U.S. as Amazon.com don't register so much as a "huh" with most Europeans. They have their local variants. Dot-com is hardly meaningful to people who are used to ".de" or ".co.uk."

IBM, undeniably a global brand, ran commercials in France last fall for its newest ThinkPads — but they were the original U.S. spots *dubbed* into French.

If someone with that kind of cash, reach and recognition can't understand why the French were appalled that IBM didn't bother to create for one of the world's richest markets an ad that spoke their own language, culturally or linguistically, how can we expect Web retailers who think "It's a small world after all" to succeed?

Here are the lessons: First, all business is local. Even a bebemoth like Wal-Mart knows that you have to conquer one town at a time. The Web doesn't change that equation.

Second, know why you're in business. It seems ridiculous, but did the people behind, say, Pets.com *really* know about the pet business, or was it a case of "Hey, let's put up a pet-supply Web site"?

Like lots of other e-retailers, their failure at least implies that they didn't know what consumers really wanted. Finding a rare book is a valuable service, but saving me from having to go to the pet store to buy some cans of cat food each week isn't.

It sounds like beresy, but in the biggest sense, the Web has changed nothing. The world is still a tough market, people are still stubborn and parochial, and a business needs to give people a compelling reason to patronize it.

Ideas are easy; implementation is hard. Too bad millions of Americans lost billions of dollars on Wall Street over the past few months because too many companies forgot the second part of that truism.

BILL LABERIS

Four Ways for Bush to Make His Mark on IT

ON A WIDE RANGE of key issues — not to mention overall style and integrity — President Bush probably couldn't be any more different from his predecessor. So it's no surprise that his administration is likely to consider acting upon initiatives that affect IT in different ways than we've seen during the past eight years. Certainly, the CIOs in the federal government expect big changes [Page One, Jan. 22].

BILL LABERIS is a consultant in Hollision, Mass., and former editor in chief of Computerworld. Contact him at bill@aberis.com.

Like any other person starting a new job, Busb is not wanting for advice on what to do and how to act. Nonetheless, the following is more grist for Bush's idea mill:

Free Microsoft. The attempted leveling of Microsoft by the Clinton Justice Department will rank among the most flagrant examples of government overreaching, overreacting and just plain acting badly. What clearer signal of change could Bush make than to broker an end to the action against Microsoft in the first six months of his presidency?

Microsoft should pay a reasonable price for its proven indiscretions, such as abuse of its market position to strong-arm OEMs. But Bush should help bury the talk of a breakup, which many consider grossly excessive, and move on. I predict you would see the stock market get a mucb-needed boost from the government's posture through its more conservative interpretation of antitrust law.

Appoint a CIO advisory council. Here, Bush could reach out to one of the most vital constituencies in the economy today and make a clear statement that IT users are as important as vendors. With important issues looming such as data privacy and the IT skills crunch, what better group to advise federal agencies and departments on bow to help mitigate the effects of those issues than a cross-section of CIOs wbo wrestle with these challenges every day? What better group to advise the administration as to the real limits, potential and promise of various information technologies so as to make any federal moves to promote their development more meaningful and relevant? And what an honor this would he for a select bunch of CIOs.

Be the perfect e-government booster. E-government has a long road yet to be traveled, as witnessed by the November election imbroglio. In far too many cases today, e-government means little other than static Web pages reflecting the thick bureaucracies of the agencies behind them.

Meanwhile, IDC forecasts that the e-government market will reach more than $100 billioo by 2008. Yet the General Services Administration (the government's management agency) says that today, fewer than one in five of the government's 100 millioo Web pages are accessible to common search engines.

With belp from the CIO advisory council and the feds' own CIOs, Bush could articulate a series of measurable goals extending throughout his four-year term to offer more services online. He could create rewards and possibly financial incentives to state and local agencies that demonstrate significant progress in their own e-government initiatives. This may he one of those rare government programs in which there's at least an intuitive if not measurable return on investment through online self-belp.

Promote vendors' global interests. Last year, the Justice Department unbraided a $130 billion merger between Sprint and MCI WorldCom after shareholders approved the plan. Justice caved in to pressures from the European Union, many of whose members prefer a form of economic socialism to free enterprise.

The requirements of international diplomacy notwithstanding, the most vital interests of the U.S. are intimately tied to free markets and free enterprise and shouldn't he stifled by the forces and voices of inefficiency. Bush should show he holds this fundamental truth to be self-evident.

That ought to get our new president through his first year. Can you think of other ways Bush can create an image as the "IT president"?

MEETING THE MESSAGING CHALLENGE

UNIFYING COMMUNICATIONS FOR E-BUSINESS

FOR TODAY'S ENTERPRISES, this is truly a new e-business millennium, where national and international boundaries are losing their meaning, and workers—through high-speed data connections—can stay in touch anytime, and from any location. But as much as road warriors and remote workers rely on broadband and wireless technologies to help them do their jobs, they are now asking IT to help them cope with their wily e-mail, voice mail, phone and fax configurations.

To unite their scattered workforces, many CIOs turn their messaging services over to network service providers (NSPs), which have the means to support large, disparate and fast-growing enterprises. And many of the NSPs are, in turn, trying to deliver what they call "unified messaging"—third-party solutions that allow their customers to send and receive e-mail, voice mail and fax messages from any communications device, anywhere in the world.

Road warriors are especially keen on unified messaging (UM) solutions.

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UNISYS

Continued from previous page

The Boston-based Yankee Group reported that in 1999, 24 percent of wireless subscribers said they'd like the option of having their e-mail read to them over the phone, and 35 percent wanted consolidated, single-number telephone service. And road warriors called for UM in the greatest numbers: 70 percent of those who spend six days or more traveling each month ask for UM functionality, according to the same report.

Drew Kraus, an analyst with San Jose, Calif.-based Dataquest, part of the GartnerGroup, agrees with these findings. "Unified messaging has the greatest appeal for road warriors," he says. "Your sales force, field service people and traveling executives need access to all kinds of information, and they want to access that data through a single interface, whether it is on a notebook PC in their hotel room, or on a wireless phone at the airport."

LONG-TERM MESSAGING NEEDS

Analysts draw stark distinctions between the different UM solutions that NSPs offer. To avoid making the wrong choice, they say, IT decision-makers should first look at their organizations' long-term overall messaging needs. "You have to start by asking yourself, simply, 'Do I need it?'" explains Kraus.

By balancing per-user costs against projected gains in productivity and promised savings, CIOs can choose between two kinds of UM offerings: those that are effectively standalone solutions, or those that permit incremental change.

Some vendors' UM solutions insist on the wholesale replacement of legacy voice mail and e-mail messaging systems. But this rigid, all-or-nothing option can force IT departments to hold off on UM until their voice mail systems are completely obsolete.

Standalone solutions can also erode UM's potential for cost reduction and increased efficiency. "If a vendor insists that clients use their e-mail and hardware exclusively, then UM can become a costly proposition," says Larry Srader, a vice president at Unisys Corp., an e-business technology company based in Blue Bell, Pa., that builds large-scale messaging systems for NSPs. Unisys' own UM solution, *Universal Messaging*, consists of bundled feature packages, or modules, that can be tailored to the needs of different groups of subscribers.

Unisys' *Universal Messaging* adapts well to existing communications infrastructures and interfaces. "Users are more likely to embrace gradual steps toward UM functionality," says Megan Gurley, an analyst at the Yankee Group. "If you can use a [UM] interface that looks like your current interface, your users are going to adopt it more readily."

Universal Messaging from Unisys also accommodates divergent worker skill levels within an organization. Its modular architecture allows companies to introduce different levels of service to users with different levels of sophistication.

With *Universal Messaging*, users and administrators can organize messages and add, modify and delete user accounts, all through one Web interface.

In addition, CIOs can use *Universal Messaging's* modular, incremental approach to UM to target only those individuals or user groups that require improved messaging functionality. As one report from GartnerGroup, Stamford, Conn., puts it: "Even if there is no felt need in the enterprise as a whole, a given department (for example, sales) or a single user (for example, the president) may have a disproportionately high requirement for unified messaging."

Continued on page S4

Unisys Reduces the Risks of UM Implementation

Even as they ask for more messaging features, users are not willing to suffer any failures in the performance and stability of their current systems. GartnerGroup says that users already expect 95 percent of their e-mail and voice mail messages to be delivered within 15 minutes worldwide, both within and between enterprises. Gartner also rates reliability among its most important criteria for unified messaging (UM) solutions. Today's voice mail systems, the research firm says, can achieve near-perfect reliability through redundant CPU and file systems, redundant power supplies, hot-plug cards (which can be replaced while a system stays online), plus online maintenance and port test diagnostic utilities that ensure the quality and integrity of every line.

E-businesses are banking on UM solutions that can work well with today's voice mail networks. "Your [UM] system is going to be with you for a number of years," notes Drew Kraus, an analyst with Gartner's Dataquest organization, "and it will have to evolve along with your communications strategy."

E-mail server software can also make trouble for new UM set-ups. Software that must support UM functions for voice mail servers, directory services and a common message store can threaten enterprises by creating multiple points of failure. In addition to system availability issues, deployment of UM systems raises security, scalability, manageability, interoperability and networking concerns because often these customized solutions require the seamless integration of multiple interfaces, hardware platforms and operating systems.

PROVEN COMMUNICATIONS PLATFORM

Unisys has greatly reduced these risks of deployment by building *Universal Messaging* on Unisys' proven and robust Communication Application Platform (CAP). Of the over 90 million voice mailboxes currently supported, the vast majority are consumer subscribers; however, Unisys anticipates that more and more large enterprises will eventually take advantage of their robust UM solution by contracting for it through local service providers. Unisys provides over 100 of the world's telcos (including nine of the 10 largest) with highly reliable voice/fax messaging systems based on the CAP. For example, one European customer reported zero unplanned downtime during the past 12 months. Other large Unisys customers recorded less than an hour of downtime in the past year. In addition to a highly reliable and scalable messaging platform, Unisys delivers world-class systems integration services and support to ensure that every deployment exceeds customer expectations.

THE POWER OF *UNIVERSAL MESSAGING*

Universal Messaging's fully customizable Web interface gives users access to any POP3 or IMAP4 standard-compliant e-mail server, while its powerful voice servers deliver steady dial-tone service to voice mail users. Users can access and generate e-mails, faxes and voice messages all from a single communication device interface.

Also, *Universal Messaging* is virtually device-independent. Subscribers can use their telephones to direct faxes and e-mail messages to printers for hardcopy output. They can also use phones to access information about an e-mail message, such as date, time, subject and sender identity. And with the system's text-to-speech capability, *Universal Messaging* can read e-mail messages to users over the phone. *Universal Messaging* also supports WAP, allowing a user to manage e-mail messages from a mobile phone with a mini-browser. However, Yankee Group analyst Megan Gurley believes that users will continue to use their PCs as often as their phones to check messages. "And PDA usage will increase, too," she says, "as more people add wireless modems and multi-modal access devices to their portable devices."

Companies must gauge their growth potentials when choosing a UM solution through their NSP. Fast growers, global organizations and buyout candidates can quickly exhaust small-scale UM systems.

Continued from page S2

REALITY CHECK: SCALABILITY

Companies must gauge their growth potentials when choosing a UM solution through their NSP. Fast growers, global organizations and buyout candidates can quickly exhaust small-scale UM systems. And not all solutions can provide the high levels of security and control required by large enterprises. "In many cases, the issue is whether an [NSP] can get multiple services working simultaneously and in sync," Dataquest's Kraus says. "And that may take a service that is used to working with larger systems." He also notes that many providers can only point to one or two large-scale implementations, "but most have been smaller."

With carrier-class scale services, companies can protect their legacy messaging systems, while expanding services for their mobile and remote workers. Unisys bases its *Universal Messaging* solution on the company's *Voice/Fax Messaging* application, which has performed reliably in many environments with more than 10 million mailboxes. In fact, over 100 NSPs in 40 countries are using the *Voice/Fax Messaging* solution.

Unisys has heavily invested in R&D to ensure that the *Universal Messaging* solution scales to the same levels of support it achieved with *Voice/Fax Messaging*. Indeed, according to Unisys' Srader, "we have already shown our ability to scale out services to serve global customers with millions of mailboxes," he says. "Now, through *Universal Messaging*, we can do even more for them at the same level."

AN OPEN SOLUTION FOR AN OPEN WORLD

Universal Messaging supports a slew of wireless and Internet-related standards, such as POP3, ATM, IMAP4, TCIP, VPIM and LDAP. "Such broad support is becoming increasingly important for e-businesses," says Dennis Perkinson, *Universal Messaging* program manager at Unisys. "The bottom line is, the more your UM solution can support these protocols, the less likely it is that you'll have to throw out your current systems."

By putting support for open standards at the heart of its UM product, Srader says, "we've built an environment within the IP infrastructure that we can customize to our clients' legacy systems." *Universal Messaging's* open architecture allows for independent growth and scalability of separate message stores; users experience minimal impact on latency speed, synchronicity and functionality.

Universal Messaging also seamlessly integrates Unisys' *Voice/Fax Messaging* system with any POP3/IMAP4 standard-compliant e-mail servers and any SAPI-compliant text-to-speech engines, making it the most flexible and scalable UM solution currently available worldwide today. *Universal Messaging* not only offers a complete set of industry-standard UM features, it also provides compatibility with Wireless Application Protocol (WAP)-enabled mini-browser phones and other next-generation technologies.

ANSWERING THE CALL

By supporting new protocols and easing the growing pains of expanding enterprises, NSPs that offer Unisys' *Universal Messaging* are answering IT's call for realistic and rapidly deployable UM solutions. Road warriors and remote workers can get new services ahead of their office-bound counterparts, and IT can reduce messaging administration costs and create better connections between new and old systems—an essential asset for seamless messaging between any two work locations. And *Universal Messaging's* modular design easily joins with legacy voice mail networks, so enterprises can embrace change as quickly as it comes.

Custom Publishing

BUSINESS

BUSINESS RENOVATION

Building materials giant Owens Corning may be operating uoder serious financial duress these days, but that hasn't stopped the company from investing in a series of Web-based initiatives. Owens Corning just launched an Internet-based logistics project, is upgrading to an online enterprise resource planning system and is kicking off a set of new portals for employees and customers. ▸ 34

VIRTUAL ADVICE

With the oumber of telecommuters growing at a steady pace, many companies are grappling with effective ways to manage teams spread out across various geographic locations. Jessica Lipnack, author of a new book oo virtual teams, talks about some of the critical success factors and obstacles that companies face when implemeoting new plans for virtual teams. ▸ 34

RETURN TO REALITY

The recent movements in stock market indicators should foretell a change in corporate attitudes toward IT spending, writes Paul A. Strassmann. And there's pleoty of room for companies to get rid of excess waste, he adds. ▸ 38

JUNK MAIL

While most companies have clearly spelled out policies regarding persooal e-mail usage, most doo't enforce them too strictly unless they spot problems with productivity, say workers and employers. ▸ 38

WIRED WEAR

Remember the days when folks had just one way to track you dowo? Of course oot. Faxes, cell phones, e-mail and pagers have become so much a part of our culture that it's hard to believe that there was ever a time wheo people had to use a telephone with a cord to call you. Now, thanks to oew products geared toward productive commuters, you can be accessible anywhere, anytime, anyplace. That is, if you want to be. ▸ 44

A SWEET FUTURE

Krispy Kreme isn't a Wall Street darling just because of its glazed doughnuts. Web-enabled applications are helping its stores operate more efficieotly and are allowing the fast-food chain to capitalize oo its expansion strategy. ▸ 46

CHURNING THEM OUT

Customer cburn is turning out to be the kiss of deatb for scores of Web-based businesses. People may buy from your site, but do they come back? In QuickStudy, advisers say the key is to turn ooe-time shoppers into loyal customers. ▸ 50

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TWO TAKES ON PRIVACY THREATS

THE WAR STORIES ARE EVERYWHERE. A hacker breaks into a company database and steals sensitive customer data. One company's spin-off is acquired by another firm, sparking new questions about data privacy policies. Bob Prochnow, chief technology officer at SiteStuff, and Robert DiStefano, managing director of IT at The Vanguard Group, tell *Computerworld* how they would handle such situations.

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Owens Corning Pushes E-Business Despite Woes

Firm launches logistics services systems, implements mySAP.com applications

BY MARC L. SONGINI

THE CURRENT financial woes of building materials giant Owens Corning haven't stopped it from investing time and money in a broad series of e-business initiatives.

Toledo, Ohio-based Owens Corning recently began renting Web-based logistics software to optimize its extensive supply-chain operations. It's also in the process of upgrading its SAP R/3 enterprise resource planning (ERP) system with Web-based versions of that software.

"What we hope to do is turn information into knowledge by delivering it to target audiences in a format that can be readily used by that audience," said Paul Fortner, director of e-business and new digital technologies at Owens Corning.

The company is also planning to develop a set of Internet portals for its customers and employees. CEO Glen Hiner has mandated that half of Owens Corning's transactions with customers be done via the Web by 2004, according to Cliff Howanyk, an e-business project leader at the company.

Working Around Chapter 11

The $5 billion manufacturer is making these moves despite its bankruptcy protection filing, which was sparked by a massive settlement of asbestos-related lawsuits. Owens Corning is also struggling to cope with softening demand for its products: Last month, the company reported a net loss of $101 million for the fourth quarter of 2000.

Owens Corning spokesman Bill Hamilton said the e-business initiatives aren't directly related to the bankruptcy proceedings. The various Web projects "are intended to make us operate more efficiently and save money, but that's independent of Chapter 11."

Other companies besides Owens Corning have been in similar straits, watching dollars while still planning to use technology to improve earnings, said Karen Peterson, an analyst at Stamford, Conn.-based consultancy Gartner Group Inc.

"Enterprises must continue to plan for growth or recovery," she said. Investing in applications like e-business-based logistics services and SAP AG's ERP system is key for such financial initiatives.

Delivery Savings

The logistics system is based on business-to-business applications developed and hosted by e-BizChain Inc., a supply-chain software vendor and application service provider in Pleasanton, Calif.

HOWANYK: Company is saving delivery time with its new logistics system.

Instead of relying on a mixture of pbone, fax or electronic data interchange channels, workers at Owens Corning can now use the Web to interact with the company's trucking carriers, input data and check the status of shipments at any time of the day. The software also ties into Owens Corning's back-office SAP system and feeds it information about carrier loads and delivery status.

The new logistics system went live last summer and is oow being used by 45 of the trucking companies that make product deliveries for Owens Corning, said Howanyk. Eventually, the company plans to increase the number of trucking companies involved to 100. The system saves about five minutes per shipment, said Howanyk. With approximately 3,500 shipments in the pipeline eacb day, he added, that amounts to considerable savings for Owens Corning.

In addition, Owens Corning is installing SAP's mySAP.com business-to-business marketplace and business intelligence application to make customer relationship management and business collaboration capabilities available via the Web.

The projects that Owens Corning is targeting are sensible, especially given the company's financial position, said Kip Martin, an analyst at Meta Group Inc. in Stamford, Conn. The financial returns on procurement-oriented applications are relatively good, and the process of installing them is fairly simple, he added.

Think of People When Planning Virtual Teams

Consultancy CEO says technology is too often the focus

The oumber of home-based workers in the U.S. rose 20% last year to nearly 24 million, reports the Wasbiog-too-based International Telework Association & Council. This growth, along with the pressures on organizations to expand globally, has prompted many firms to staff business and IT projects with geographically dispersed individuals, according to **Jessica Lipnack**, CEO of West Newton, Mass.-based consultancy VirtualTeams.com and co-author of *Virtual Teams: People Working Across Boundaries With Technology* (John Wiley & Sons, 2000).

LIPNACK: "Without trust, nothing is going to happen."

Lipnack, who has helped Fortune 500 companies such as AT&T Corp. and New York-based Pfizer Inc. launch virtual organizations, recently spoke with *Computerworld*'s Julekha Dash about her thoughts on the subject.

Q: What are some of the latest technologies that enable virtual teams?

A: Let's start with the Web. ... The availability of the Web has made it possible for people to be anyplace and to be at work. Secondly, collaborative software, cell phones and e-mail.

Q: What companies have done a good job establishing virtual teams?

A: NCR did a fabulous thing by creating something called a "Worm Hole." They made it easy for four locations to feel like one. They used a switched T1 line — it allows you to have more than one video feed at the same time. [Workers] had to go to a conference room with three monitors set for sharing data. You had one [monitor] for sharing online data, one for overheads and one for videos. And the quality of the video is as good as *Nightline*.

Q: What other firms have implemented successful virtual teams?

A: Shell Oil, Sun Microsystems, Motorola. At Motorola, the next step is to have wireless access to wherever you are — taking pagers and turning them into full-bandwidth communication devices.

Q: What are some critical success factors for creating virtual teams?

A: Good "people" thinking. [Companies] are thinking about bandwidth and technology issues. They're not thinking about the carbon life forms that are using the technology. Anything that can go wrong with a face-to-face team can go wrong with virtual teams, only worse.

There needs to be alignment around purpose, dealing with conflict, sharing leadership. These are really significant problems with teams, and we've barely figured out how to solve them face-to-face, never mind wheo people are spread out around the globe.

Q: How can IT employees work on virtual teams?

A: In a way, it's harder for IT people. They know so much about the technology, it's difficult for them to put the technology aside and think about human issues. For IT people to get focused off the hardware and into the "peopleware" is the real challenge in design, implementation and participation.

Q: How can companies make virtual teams work when the workers are in different countries, as is the case with offshore development?

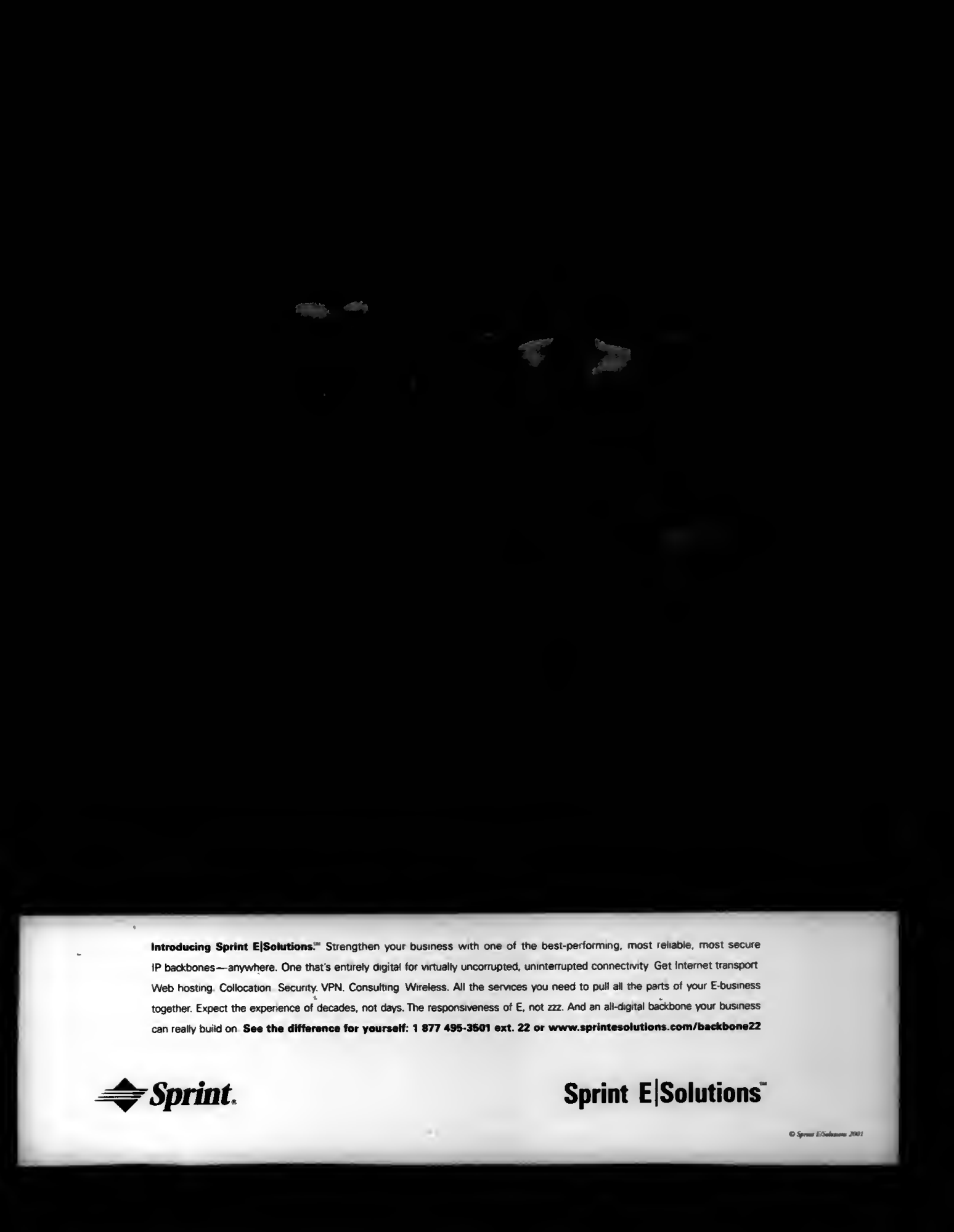
A: That'a a challenge. The solution is to try to bring them face-to-face to begin with, because it gives you a chance to build trust. Without trust, nothing is going to happen.

SNAPSHOT

High Expectations

CEO at 23? No big deal, according to some of the 1,000 college students polled for a recent survey by Jobtrack.com, an online job listing service for students and alumni. When asked how long they think it will take them to accomplish their career goals, here's how the young 'uns responded:

11%	37%	33%	19%
1 to 2 years	2 to 5 years	5 to 10 years	10 years-plus



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WORKSTYLES

Don't Blame E-Mail

When you get caught sending a naughty joke to your co-workers, don't blame the messenger.

While workplace Internet and e-mail usage policies may seem strict, many companies don't enforce them unless staffers violate antiharassment policies or basic work expectations.

At Twentieth Century Fox Film Corp., there's a strong policy for all electronic media, and people have been disciplined for inappropriate content.

But, said Jeff Uslan, manager of information protection at the Los Angeles-based film company, "I don't know anybody here [who] has been terminated solely on the basis of an e-mail."

Companies become aware of abuse when employees aren't fulfilling their duties, or when there has been some truly inappropriate behavior, Uslan said. It's the behavior, not the medium in which it's conveyed, that prompts the firing, he added.

Fox's policy is different than most, since movie scripts may contain vulgar language and the company can't monitor or block traffic, Uslan said.

"Those kind of things we expect to come across on our e-mail," he said.

Frank Butstraen, vice president of Philips Electronics NV in Amsterdam, said he isn't as worried about the content of e-mails as he is about their size. Huge attachments are the biggest threat to his system, he said, not raunchy jokes.

No Comment

As willing as some people may be to write risky missives, many are hesitant to speak publicly about their e-mail usage or how they feel about their companies' policies. Legal ramifications and job security make IT managers and the most savvy users leery.

For example, one company in the Boston area strictly enforces its policy of prohibiting employees from sending or receiving any personal e-mail. But the subject is so sensitive that when questioned about the policy a company spokesman said, "We wouldn't want to comment about that."

A messaging administrator at a Midwest publishing company who asked not to be identified said he usually documents any abuses, which are rare and fairly easy to deal with. He once let an employee know that he was aware of his visits to a raunchy Web site, and the visits stopped. Another time, he gave the information to the human resources department.

One officer at a small Massachusetts lending firm, who also asked to remain anonymous, said her company doesn't even have a written policy because the company is so small. But its size is, in a way, a control on inappropriate e-mail use.

Asked if she thinks about what she writes before sending it, she responded, "Sure, because anybody can go in the back room and pull it up on the server."

Classified Information

The U.S. Department of Energy (DOE) has reason to be extra cautious about its e-mail security. Last month, the DOE confirmed that it's testing a new filtering software on all incoming and outgoing e-mail at four national laboratories where nuclear weapons programs are based. The software looks for keywords, like the name of a nuclear weapon, burns the suspect e-mail on a CD, then seeks permission from the DOE's general counsel to read the e-mail.

The director of a nuclear weapons program at one of the four laboratories said he was unaware of the testing, but added that he wasn't surprised to hear it.

Reading the advisory on his screen, which says all information on or going through the PC is subject to review, he said, "I just assume they monitor everything I do anyway."

– Jennifer DiSabatino

> I just assume they monitor everything I do anyway.
>
> **DIRECTOR OF A NUCLEAR WEAPONS PROGRAM AT A NATIONAL LABORATORY, ON E-MAIL MONITORING**

PAUL A. STRASSMANN

Signs on Wall Street

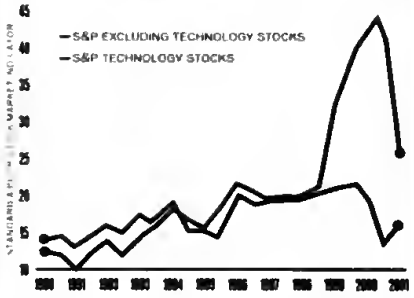
THE RECENT GYRATIONS of Standard & Poor's stock market indicators should serve as a warning that recently liberal IT spending habits should now revert to more realistic levels. The accompanying graph shows the divergence between two indicators.

The graph conveys two insights that IT executives must comprehend to get a better perspective of what may happen next.

First, technology buyers managed to keep only level market valuations during what was claimed to be one of the biggest economic booms in U.S. history. They spent wildly on IT but couldn't demonstrate to investors that the technology-driven New Economy was delivering spectacular gains. Now that a prosperous decade is ending, it should be clear that IT buyers may become reluctant to keep investing in more technology at recent growth rates.

Techs vs. Nontechs

The meteoric rise — and fall — of technology stocks.



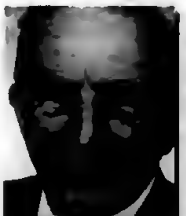
Second, technology stocks lagged behind the rest of the Standard & Poor's index until 1995, even though their revenues were growing faster than IT buyers' revenues. It appears that investors kept discounting the worth of volatile future earnings of firms that produced short-lived technologies. Now, with a possible recession looming, customers will resist making commitments to another round of rapidly obsolescent technologies on a scale comparable to that of 1999 and last year.

There are three plausible explanations for such differences in trends:

One is the casino gambler's greed. He knows that the house odds are always against him. But he keeps playing with the expectation of winning big, as other players lose enough money to make him rich.

The second is fear. Starting in 1997, the Y2k scare loosened every firm's purses for largely unrestrained spending.

The third explanation is intimidation. Sane economic restraints were thrown away when the frenzy to replace the $1 trillion that had been invested in client/server installations stimulated the rush to Internet-based systems. The Web, B2C and B2B e-commerce have been sold as survival games, forcing firms to participate without proof of payoffs. A parade of gurus preached that unless you rearmed with the latest technology, you'd die when global competition was unleashed. That scared enough CEOs and chief financial officers to allow spending and salaries to reach unprecedented levels.



PAUL A. STRASSMANN's forecast of the coming economic crunch was the central theme of his book *Information Productivity: Assessing Information Management Costs of U.S. Corporations* (Information Economics Press, 1999). Contact him at [redacted].

Implications

The prudent IT executive should cut back on major spending that doesn't have much chance of delivering profits. When the budget analysts start scraping every IT expense item to boost already reduced earnings, they shouldn't find too much fat. The scarcity of funds doesn't mean to halt innovation. The beauty of our economy is that there are enough aspiring entrepreneurs who are willing to sweat long hours to invent and test new technologies. In the next few years, it will be advantageous — and surely less risky — for each corporation to buy, rather than create, new technologies.

To survive, IT executives will have to concentrate on getting costs, reliability and quality engineered to perfection. It's back to basics for a while, which means squeezing every penny out of ongoing operations. But it would be a fatal flaw to outsource operations, especially if existing staff can fix them. The prevailing fiction about how to run IT is to outsource bread-and-butter operations while keeping responsibility for résumé-enhancing innovations. The results of such a policy, in every case I've examined, are higher corporate IT expenses and never having enough qualified talent to manage contractors and compete with increasingly hungry entrepreneurs.

The stock market is saying that the end of euphoria has arrived and that productivity results, rather than "visions," will probably prevail in the next few years.

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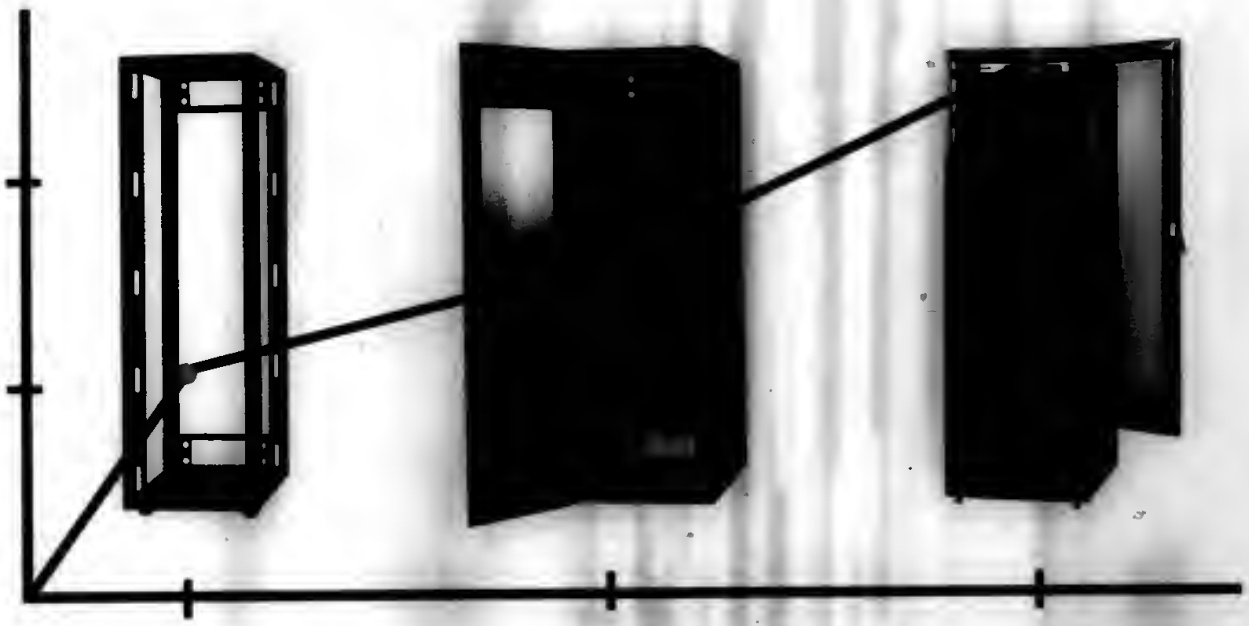

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Precision Air
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Nice facade. Bad infrastructure.

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INFRASTRUCTURE:

SOONER OR LATER, IT MATTERS.

INFRASTRUCTURE. The physical foundation of any thriving enterprise. In the world of technology, infrastructure means integrating the servers, software and storage systems of an e-business into one finely tuned machine. And a well-planned, well-executed infrastructure is the underlying foundation of successful communication, commerce, competitiveness and growth within and among e-businesses everywhere.

To put it simply: as goes iofrastructure, so goes the enterprise. In today's economy, all the ingenious products, brilliant marketing and champion deal closers won't amount to a heck of a lot if you can't connect to your outside suppliers, if the network crashes or the databases fail (and all you can say to customers is, "Sorry, the computers are down; can you call us back tomorrow?").

Planning, building and maintaioing e-business infrastructure is about hard questions: What platforms should I use? How do I plan for the unexpected? Will it grow when we grow? Will it work with new technology in the future? Will it build upon my current systems? Can I link to my customers' and suppliers' systems? I've heard about open standards, but what can they do for my business? What about outsourcing? How do I finance all of this?

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e business infrastructure

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Two IT leaders explore five h

By Julia King ar

ON TH

You don't want employees to think you're looking over their shoulders constantly.
ROBERT DISTEFANO
MANAGING DIRECTOR
THE VANGUARD

HOW WOULD YOU react if your CEO ordered your IT organization to track an employee's e-mail? Or if a hacker gained access to sensitive customer information?

We posed this and four other hypothetical privacy scenarios to two IT leaders: Bob Prochnow, 46, chief technology officer at Austin, Texas-based SiteStuff Inc., an online exchange serving buyers and sellers in the commercial real estate market; and Robert DiStefano, 51, managing director of IT at The Vanguard Group Inc., a Valley Forge, Pa.-based mutual fund company. Here's how they responded:

Your company decides to spin off a midsize division that serves hundreds of thousands of individual customers. A year later, the spin-off is acquired by a different company. What do you do to make sure customer data remains confidential?

PROCHNOW: The first step is to identify the information that customers feel is confidential. Then, as part of a privacy policy, we'd have to make it clear how we store and use information, including whether we would provide it in detail or in an aggregated form to anyone. Customers typically don't object to providing information in an aggregate form.

If we were the parent company and we were spinning off a subsidiary whose customers were still our customers, we'd retain ownership of confidentiality as part of the spin-off arrangement.

DiSTEFANO: This would be very touchy. I'd want to ID every attribute of the data about clients. Then I'd want to clearly choose which elements of that data are needed to let the spin-off retain its revenue stream and which things are owned by the parent company. They've got to be discrete.

Where there's overlap, it gets tricky. The key is to make the apps and the services offered to clients as discrete as you can, which is often difficult. I'd also want to have a privacy consultant come in and render an opinion as due diligence.

Your CEO orders you and your IT organization to track an employee's e-mail. How would you handle the situation?

PROCHNOW: The first thing I'd do is get the business reason. There might, for instance, be suspicion that an employee is exposing the company to federal law violations. Then I'd consult with the legal staff to make sure that they concur that the business reason justifies overriding the individual's privacy. If legal concurred, we'd then take steps to get at that information, and we'd have to do that very discreetly.

We'd have only a very small number of technology people involved and, depending on the individual circumstance, we'd inform the employee or not. You have to handle it on an individual basis. But you have to go into it knowing that once you've done this with an employee, you've completely destroyed your relationship with that employee. It's not something you can do lightly.

DiSTEFANO: That has to be handled up front, from a policy point of view. First, the company should have made a conscious decision on how they'll deal with ownership of e-mail. Second, that policy has to be communicated to every employee, preferably on something they sign. If you've told everyone their e-mail may be monitored, and they've signed a form, that's the first step.

The other issue is, how fair is it to do the tracking? You don't want employees to think you're looking over their shoulders constantly. If there's a complaint from a supervisor about an activity that might be criminal or fraudulent, then certainly that ought to be turned over to law enforcement or the company's internal audit arm. You need clear guidelines.

New federal legislation mandates that your company post a privacy policy on your Web site within three months. When and how do you begin?

PROCHNOW: This is funny — only federal legislation would assume we could go three months without posting a privacy policy. As an e-commerce company, if we needed a privacy policy, we'd have to do it in days. Also, all responsible e-commerce and Web companies have to post privacy policies. It's standard business practice.

But there are differences between a B2B and a B2C company. As a B2B, our customers are really another company's employees, as opposed to a consumer who goes to a Web site. Our relationship is one company to another. It does introduce complexity to privacy policy, because ultimately, the employers of our users have the right to the data the employee is providing to us.

Any privacy policy should be re-

viewed by the business owners, the marketing departmeot and legal to make sure it's adequate and implementable. In a good organization, the privacy policy is something that crosses a broad section of the company.

DiSTEFANO: We would look to our legal department to understand the regulation. They would also interpret how it interacts with other regulations from agencies like [the National Association of Securities Dealers]. That's important to us because we're in a heavily regulated industry. Legal would then draft what we should do. We have a compliance department that would make sure everybody understood the ramifications of the regulation.

A hacker has gained access to information on hundreds of your customers, although no credit card numbers were compromised because they were encrypted. How do you restore the confidence of your customers and the public at large?

PROCHNOW: That's a good question. It's for that reason that SiteStuff has decided not to store credit card data. It's the crown jewels for a hacker to find. It was absolutely decided up front not to store credit card data.

As a B2B company, a lot of the purchases that get made with us are through trade accounts that don't have credit card data. We can do e-commerce without storing that data. But if we were storing credit card oumbers [and that data got hacked], as the CTO, I'd be ultimately held responsible. But restoring confidence would be a joint effort across the company.

As the technology person, I'd have to fully document how the disclosure happened, find the reason why it happened and identify what we did to protect ourselves. If we could identify what was stolen, the business side would work with each customer, giving them advance notice of what steps they could take to protect themselves on an individual basis.

I'd also use technology to generate evidence. If you were storing credit card data, you'd have to have mechanisms to log that data. The very first response would be a purely technical one — to determine what happened and why.

DiSTEFANO: You'd want to notify clients proactively to say, "This information was compromised, but the hacker couldn't use it to your disadvantage." You want to tell clients as much as you can — without causing another breach — to reassure them you're being honest.

A technical analysis of how the hacker did it wouldn't be understood [by most customers], but it would reassure them that you understood it. You want to say, "We're disclosing specifics on the attack, we know how it happened, we've closed that hole and we're having a third party step in to assess our security."

Someone breaches security and gains access to highly confidential customer information. Your own investigation indicates it's an inside job. How do you handle the situation without demoralizing your entire IT group?

PROCHNOW: There has to be a balance betweeo a company's needs and individual privacy — the same as if we were going to look at someone's e-mail. The first step would be to determine the severity of the problem and make sure there are legal grounds to investigate the problem. If you concluded the problem was intentional and severe, you'd want to handle it very tactfully and do it on a personal level.

But what you could do up front is focus on recruiting to make sure you hire very competent, reliable and ethical staff, and then treat them fairly. If you have a good working environment, I think you can avoid this in the first place.

MOREONLINE
For more on privacy, visit our Web site www.computerworld.com/privacy

DiSTEFANO: You have to deal with people who go over the line, but then you have to be able to look other employees in the eye and say, "What they did was out of bounds." So you've got to have a certain amount of trust, because you can't always explain [to other employees] what the terminated employee did.

A case like this deserves a lot of thought from HR. It would have to be clear to the whole department that the termination was for the sake of protecting customer data and the other employees. It's easier if you have good audit trails. If you remind everybody that protecting the client's data is the top priority, you can get them to accept tighter procedures. ▶

King is an editor at Computerworld. *Ulfelder is a freelance writer in Southboro, Mass. Contact him at sulfelder@charter.net.*

ypothetical privacy scenarios.
d Steve Ulfelder

ESPOT

BILL VANDERBILT

The Well-Wired Commuter

If you want to stay connected all the time, you can get a surprising amount done on your commute. But don't say we didn't warn you.

By Russell Kay

As wireless communications become faster and more widely available, there's a strong temptation to acquire the latest technology so you can stay in touch with your business wherever you are.

Now, you can get e-mail and check your portfolio while you drive or ride to and from work — even while you're at lunch. I'd be the last person to suggest that anyone should do any of these things, but it's clear that lots of folks really do want to stay connected, wired or wireless.

Assuming you're one of those folks, just how tightly can you be tied to the world of electronic communications and portable electronic information?

Riding the Wire

Let's start with a commuter who takes public transportation to the office or is a rider in a car or van pool.

You're going to be sitting for anywhere from 10 minutes to an hour or more, and the urge to make that time productive can be overpowering. If you've got your laptop with you, you can attach a wireless modem and retrieve your e-mail, download files or work on spreadsheets.

But if that's not feasible — you're standing up, for example — then try one of the handy-dandy two-way pagers/e-mail appliances, like Waterloo, Ontario-based Research In Motion Ltd.'s BlackBerry. The newer model, the 957, has a screen the size of a Palm V and is pretty simple to use.

Or use one of the similar devices from Schaumburg, Ill.-based Motorola Inc., the Timeport pagers. Or you can get one of those new Wireless Application Protocol-enabled smart phones, such as the Smartphone from Kyocera Wireless Corp. in San Diego or the R380 from LM Ericsson Telephone Co. in Stockholm.

The principal drawback of smartphones is that they have small screens, though they're better than most competing products. You can use these phones for e-mail, but it takes extra effort and may be fairly expensive, so you really have to want it.

Of course, you've already got a cell phone — doesn't everyone? How about getting an on-ear headset so you don't have to hold up the phone? There's apparently little health risk due to radiation from keeping a cell phone close to your ear, and wearing a headset is a lot more comfortable than bending your elbow for the entire morning ride.

Wireless Bluetooth phones should be available soon — but that means you might have to buy a new phone.

And of course, you also have a personal digital assistant (PDA). It stores your appointments and address book and has a couple of games to play when you have to keep your fingers busy.

Double Duty

With Motorola's StarTac Organizer or the VisorPhone module that fits Mountain View, Calif.-based Handspring Inc.'s Visor PDA, you have the opportunity to carry just a single appliance (albeit one that's a bit bulkier than you might like) on your commute. It performs both of those functions and lets you call up a name from your contact list and dial it automatically.

You can also add a wireless modem to your PDA for e-mail and Web browsing. Here, it's hard to make a single recommendation.

The Palm V from Palm Inc. in Santa Clara, Calif., integrates nicely with a modem from OmniSky Corp. in Palo Alto, Calif., making a small, sleek package. Hewlett-Packard Co.'s Jornada 545/548 and Compaq Computer Corp.'s iPaq Pocket PCs are more powerful, with color screens, but the modems that are currently available are bulky and awkward.

Bells, Whistles and Digital Video

But we're only beginning to scratch the surface of electronic devices that can make your commute more productive or entertaining. Don't forget your MP3 player, so you can program your own music listening.

Use one of the new CD players that can read MP3 files and you can store a month's worth of commuter music on a single CD. Wear a smart watch that automatically sets itself to the proper time and can store addresses, appointments and short messages. Keep a digital voice recorder handy for recording quick thoughts and fleeting ideas — or even just remembering where you parked the car.

Wireless headset for cell phone
Eyetrek glasses for watching DVD movies
Shoulder holster (e-holster) holds Web-enabled cell phone and color PDA
Digital camera with built-in modem
In pocket: digital voice recorder, MP3 player, laser pointer . . . and a pencil
"Utility belt" with paper, wireless e-mail device, GPS receiver, authentication token, Leatherman pocket tool
Digital watch that sets itself, holds calendar, address book and calculator
Briefcase (equipped with alarm) to carry laptop, wireless modem, portable printer/scanner and spare batteries
Running shoes with built-in pedometer and flashing lights for walking after dark

If you've got a seriously long commute, think about carrying a portable DVD player, like the $600 PDV-20 from Long Beach, Calif.-based Pioneer North America Inc., the $1,500 DVP-FX1 from Park Ridge, N.J.-based Sony Electronics Inc. or the $900 Panasonic DVD-L75 from Secaucus, N.J.-based Matsushita Electric Corporation of America.

And if you're going that far, you might want to investigate "eyeglasses" that give you a virtual image five feet wide, such as the $859 Eye-Trek FMD-150W goggles from Olympus America Inc. in Melville, N.Y.

Neither the players nor the glasses are cheap, but if you have to ask. . . .

Where Am I?

If location is important, you may want to carry a portable Global Positioning System (GPS) receiver, like Olathe, Kan.-based Garmin International's eMap. You'll always know where you are, as long as you can see some sky. You'll also know how fast you're traveling and your altitude. Think of the trivia bets you can win with this gadget!

You may have noticed that as we add more and more devices, your pockets are getting pretty full and looking pretty weird. Here are a couple of ideas on how to avoid looking like a total nerd.

First, consider the $80 e-Holster from Personal Electronics Concealment LLC in Norcross, Ga. This is an honest-to-goodness shoulder holster originally designed for a firearm. But it's been adapted to carry a cell phone, a PDA or other portable devices. It's remarkably comfortable, though I don't recommend wearing it without a covering jacket: You might make the people around you nervous.

Another option is to create a "utility belt" on which you can comfortably and conveniently carry all those clip-on or slide-on devices. Using a separate belt makes it simpler to dress and change clothes and gives you a lot of flexibility. Just ask any police officer.

While you're at it, if you're going to do the belt thing, I recommend you add one of those pliers-based pocket tools, like the Pocket Survival Tool made by Leatherman Tool Group Inc. in Portland, Ore. With all the other gizmos, you won't notice the added weight, and when you suddenly need a Phillips screwdriver or a pair of pliers, a Pocket Survival Tool can be a lifesaver — far more useful than a Swiss Army knife.

Back on Track

If you're an early-morning runner, you might want to consider a pair of running shoes with a built-in pedometer that verifies how far you've run and how many calories you've burned. And if you're running in the dark, get the shoes with the flashing lights in the midsole, so you don't become a traffic statistic.

If you drive to work, you can be even more connected. Of course, you can't use the DVD player and goggles, but you can have an in-car GPS system that talks to you, gives directions and, soon, will be able to advise you of traffic problems before you get to them.

The GPS units in Hondas use a DVD instead of a CD and thus fit the entire country onto a single disc.

Help Is on the Way

If you get into trouble, and your car is equipped with a GPS system that has a wireless help system, you can summon aid without ever leaving your car or even rolling down the window. The OnStar system from General Motors Corp.'s OnStar subsidiary offers that type of functionality.

I suspect that in a couple of years, we'll be able to read e-mail in a heads-up display on the car windshield, though that sounds like a recipe for disaster. But having text-to-speech software read your e-mail out loud is a reasonable alternative.

Productive Progress - Or Is It?

If you're tempted to try out a lot of these ideas, you'll find yourself remarkably in touch with your business and the world. And you may increase your personal productivity as well. During your morning commute, you may be able to get your day off to a running start, catch up on reading your morning reports, rearrange your schedule and even conduct significant business before you ever arrive at the office. After all, you're going to spend that commuting time one way or another.

If you can gain a step on your day, then you're clearly one up on those who don't. And if you use your commuting time productively, you may then be able to really leave the office behind once you get home in the evening.

But before you commit to constant contact, remember there's a price to pay for it.

It's all well and good to be the wholly wired commuter, but there's a lot to be said for using that "dead" time to ramp up to speed or decompress from the day's activities, to collect your thoughts and reflect on your decisions.

Even If you're driving instead of riding, that time in the morning and evening can often be extraordinarily valuable for centering your mind and emotions and for thinking through ideas that you just didn't have time for during the day.

My personal feeling is that there's more to gain from this kind of quiet downtime than from a frantic effort to keep on top of all the news, all the deals, all the data. So give yourself a break. Pull the plug, at least some of the time.

RECIPE FOR GROWTH

Web-enabled business applications help Krispy Kreme expand beyond its Southern roots. By Thomas Hoffman

STORE OPENINGS FOR KRISPY Kreme Doughnut Corp. have become legendary. Hundreds of people wrap around city street corners, waiting in line through the night just to be among the first to sample one of the company's glazed treats.

The grand openings have helped Krispy Kreme evolve into a Wall Street darling since the 63-year-old chain went public last April. The Winston-Salem, N.C.-based company's stock has swelled as much as 295% since then, making it the second-most successful initial public offering last year, according to Bloomberg LLP in New York.

But it's going to take a lot more than 1950s-style shops and 20-plus products to help Krispy Kreme capitalize on its 5-year-old strategy of spreading its minibakeries beyond its Southern roots into major metropolitan markets such as Los Angeles and secondary markets such as Rochester, N.Y.

That's one reason why the company tapped CIO Frank Hood, a textile industry veteran, to reshape its IT strategy. Hood's approach to Web-enabling the firm's core business applications and allowing its 175 stores to communicate more effectively with headquarters is already beginning to yield dividends, according to senior management. "Frank helped us understand what the technology could do for our business," says Randy Casstevens, Krispy Kreme's senior vice president of corporate finance. "He's not an expert in accounting or finance, but he knows enough to determine what [tools] people need."

A New Mix

That's just what Hood and his 22-person IT team have been doing. Before Hood came on board in 1997, Krispy Kreme was entering new lines of business such as in-store bakeries and distributing its goods through convenience stores. At that time, the company relied on a hodgepodge of outdated IBM AS/400-based applications to support its operations.

But before Hood could develop and roll out Web-based systems to streamline order entry and allow franchisees to post weekly profit-and-loss statements, he had to do some housecleaning and recruiting to fine-tune his IT team. The recruiting effort came at the height of year 2000 project work, when large companies in the Winston-Salem area such as Wachovia Corp. and R.J. Reynolds Tobacco Co. were gobbling up IT professionals at a furious pace. But Krispy Kreme was able to lure many "entrepreneurial" IT professionals because it took a "greenfield approach" to Y2k and replaced nearly all of its critical systems, says Hood.

That appealed to many recruits because they wouldn't have to work on mind-numbing software conversion projects. Many new employees were also immediately given direct responsibility for cultivating new projects, such as the Krispy Kreme Information Exchange, an intranet-based system developed 18 months ago to give franchisees a "vertical view into Krispy Kreme's operations," says Hood.

The intranet allows franchisees to use thin clients to view financial results on a store-level basis as well as troubleshoot equipment problems with fryers or ovens using a multimedia application developed with Handshaw & Associates Inc., a computer-based training firm in nearby Charlotte, N.C.

One benefit of the computer-based training system is that the turnover rate for employees at quick-service restaurants is high compared with other industries, "so you have to make training and troubleshooting very easy, since you're constantly training a lot of people," says Hood.

Meanwhile, the company last month began piloting its Web-based order entry system. The system, which Hood says cost in the low six figures to develop, is expected by midyear to replace a fax-based approach that franchisees and company-owned stores have been using to order materials.

If there are any lingering concerns about Krispy Kreme's expansion strategy, "it might be that it's too slow," says Don Boroian, chairman of Francorp Inc., a franchise management consultancy in Olympia Fields, Ill. For example, the franchise has added three stores in Chicago since 1998, but it's so popular there "that they easily could have added 50," he says.

Still, it's unlikely that Krispy Kreme will make the same mistakes many retailers made in the 1980s and early 1990s when they overexpanded and the market went soft. "We feel very strongly about preserving our brand," says Hood. "There's so much dilution in the market, but, luckily, our consumers are people who love us and want more."

CIO FRANK A. HOOD (foreground with CFO J. Paul Breitbach at his left) and his 22-person IT staff at Krispy Kreme, have worked on several new projects in the past three years to help the company steadily grow.

SOURCE: COMPANY REPORTS

Krispy Kreme Doughnut Corp.

Headquarters: Winston-Salem, N.C.

Sales: $323.3 million (through the nine months ended Oct. 29)

Comparable store sales growth: 23.7% (through nine months ended Oct. 29)

Locations: 175 stores in 28 states

Doughnuts produced daily: 3 million

Number of employees: 3,260

Stock listing: KREM (Nasdaq)

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Here Come Geeks, Lawyers and Money

New IT books focus on the Microsoft case, e-commerce, dot-coms and cryptography

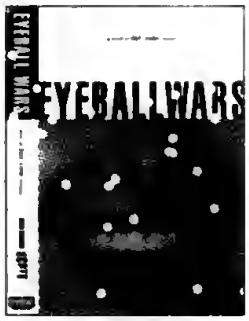
Pride Before the Fall: The Trials of Bill Gates and the End of the Microsoft Era, *by John Heilemann, (HarperCollins, 243 pages, $25).* Heilemann, a former staff writer at *The New Yorker* and *The Economist* who was also a special correspondent for *Wired* magazine, offers an eye-opening, if slightly biased, account of the events leading up to last year's court-ordered breakup of Microsoft Corp., which the firm is appealing before a federal appeals court.

Pride Before the Fall is an easy and breezy read with many riveting passages.

Heilemann's story begins in 1995, when Microsoft's enemies in Silicon Valley began lobbying to bring the antitrust hammer down on the firm.

The book looks into the personalities on both sides of the case, from Joel Klein, the Justice Department antitrust division chief, who reluctantly took on Microsoft, to Gates, who is portrayed both as a defiant corporate giant and as a beleaguered executive who wept before his board of directors as pressure from the landmark lawsuit increased.

Heilemann had the greatest access among Microsoft's enemies, but, to his credit, did legwork on the firm's campus to



gauge the mood inside the company and to interview Gates on two occasions. He also shines a light on the zeal among Silicon Valley adversaries to prosecute Microsoft and on the reticence of some of its key players to testify for the government out of fear that doing so would be bad for their businesses.

But the bottom line of the book is that the antitrust case has cut the software giant and its seemingly invincible chairman and founder, the world's richest man, down to size.

— Rick Saia

Eyeball Wars, *by David Meerman Scott (Fiction, Freshspot Publishing, 351 pages, $24).* Every generation has its overexposed social phenomena and bad fiction glorifying it. The Great Depression and World War II generations had their stoic heroes; the Vietnam era had its tortured-but-sensitive warriors and sensitive-but-tough protesters. The '80s had greed. But good fiction about those eras mostly skewered their icons.

So far, the e-commerce revolution is no different. Those with the best opinions about the e-commerce revolution tell the worst stories about it.

The latest in the exploitative, wanna-be-an-Internet-billionaire collection of millennial fiction stars Richard Williams, a disinherited heir to an international newspaper empire who is forced by vile circumstance to struggle (with just a few million in funding from Dad), to build a borderline e-commerce site into an initial public offering monstrous enough to make him a billionaire and unseat his old man.

Williams, an almost cartoonish amalgamation of rich playboy clichés, is helped along his way by a collection of outcasts with hearts that aren't so much filled with gold as greed; none evinces any motivation deeper than lust, avarice or hunger.

As vice president of marketing at online aggregator NewsEdge Corp. in Burlington, Mass., author Scott is obviously familiar with the territory. But if this novel accurately reflects the lives and values of the people inhabiting the dot-com world, worthless stock options aren't the only reason to avoid it.

— Kevin Fogarty

Unchained Value: The New Logic of Digital Business, *by Mary J. Cronin (Harvard Business School Press, 195 pages, $29.95).* If in e-commerce fiction all the characters are too eager to leap into unproved business models, corporations in the real world are too wary — at least, that's how the author of e-commerce strategy books tell it.

Cronin outlines a series of useful, though not revolutionary, steps that traditional companies can take to help modify or eliminate the traditional values and processes that made them successful in the real world but might be holding them back online. She claims that her methods can result in faster analysis and action,

better customer care and online services that augment real-world products.

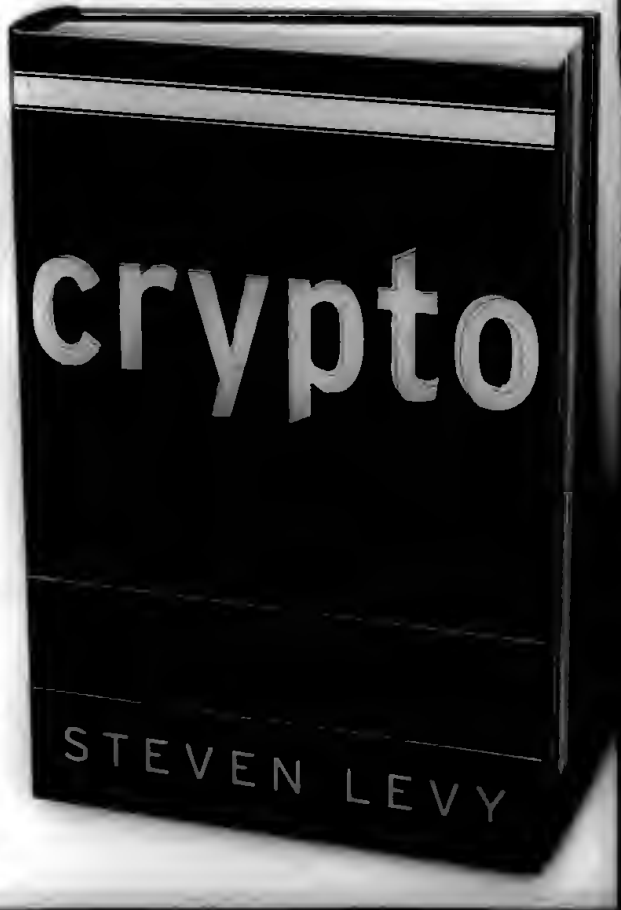
Her tone, however, echoes the shrill chorus from a year or so ago that warned traditional companies they would die if they didn't remake themselves in the dot-com image. With the dot-com landscape cratered, that message is, understandably, weaker than it might otherwise be.

— Kevin Fogarty

Crypto: When the Code Rebels Beat the Government – Saving Privacy in the Digital Age, *by Steven Levy (Viking Press; 352 pages; $25.95).* Levy, chief technology writer at *Newsweek* and author of *Hackers: Heroes of the Computer Revolution* (Penguin USA, 2001), focuses on the thinkers and innovators who brought cryptography out of the realm of geeks and secret government agencies and applied its principles to help resolve the issues of privacy and security on the Internet.

The book starts slowly but builds momentum as Levy puts a human face on the battle between the security pioneers and the federal government. The decisive development, according to Levy, was an unlikely alliance between the computer geeks and big business. The result is a coherent and entertaining book about an important, though technical, subject.

— Maria Trombly



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ORSUS Solutions

FINANCIAL & BUSINESS CONCEPTS IN BRIEF

Churn

BY DAN VERTON

THE PREVAILING wisdom in online retailing used to be, "Build a Web site, and they will come." For the most part, it worked out that way. People came in droves, sending the stock valuations of online retailers soaring.

That was then. Today, those online retailers are learning a valuable lesson that could mean the difference between staying online and going out of business: Customer churn burts the bottom line.

The harsh reality for online retailers is that while people do indeed shop at popular retail Web sites, many do so once and rarely, if ever, come back.

In fact, the vast majority of online customer conversion rates continue to hover around 1% to 2%, according to Paul Ritter, an analyst at The Yankee Group in Boston. Many retail Web sites, it seems, just aren't "sticky" enough to keep a lot of shoppers coming back.

Customer churn is "the mass abandonment of customers who are not converting to buyers," explains David Daniels, an analyst at Jupiter Research in New York.

Churn is about customer retention, says Nina Abdelmessih, a manager at the The Boston Consulting Group Inc. in Boston. It refers to "the ability to attract and retain consumers, from the first-time purchase through their entire life online," she says.

But how does a Web site accomplish that?

Getting Personal

One of the most popular and effective ways to reduce customer churn is to introduce personalized shopping experiences, according to analysts and experts.

"The big play is for sites to try to personalize the customer's experience," says Daniels. "Tailoring the product selection to the consumer is the most critical factor that consumers mention when they select an online store."

DEFINITION

Churn describes the number or percentage of one-time visitors to Web sites who are not converted into longtime, loyal customers, as well as the number of regular customers who abandon a relationship with an online retailer. It's also referred to as the customer conversion rate.

Lands' End Inc. is a prime example of the move toward personalization, says Barrett LaMothe Ladd, an analyst at Gomez Advisors Inc. in Waltham, Mass. Last month, the Dodgeville, Wis.-based company introduced its Personal Shopper function to its Web site, which makes recommendations to clothes shoppers based on their preferences.

"Personalization is the name of the Internet game," wrote Ladd in a recent study of the Lands' End initiative. "It can improve conversion rates, as it shows relevant items to a consumer. It is also a useful tool for up-sell and cross-sell opportunities."

These tools seem to be helping Lands' End's e-commerce business, which converted 11.8% of Web site visitors into online customers in December during the peak of the holiday shopping season, says Ritter.

Another big-name Web retailer that will soon introduce personalized shopping is BlueLight.com LLC in San Francisco. The online division of Troy, Mich.-based Kmart Corp. is currently working with San Mateo, Calif.-based E.piphany Inc. to produce by early summer a personal shopping experience that's intended to present customers with the items they're most likely to shop for, based on their past shopping patterns, says BlueLight.com spokesman David Karraker.

However, BlueLight has taken the idea of personalization one step further through a detailed understanding of which customers are buying online.

"Last year, it was Internet America going online," says Karraker. "This year, you see Middle America coming online and gravitating toward known brands."

Other incentives designed to keep people coming back to BlueLight's Web site include first-time buyer discounts, free shipping and shipping upgrades, and a rewards program. BlueLight.com has also taken Kmart's traditional "blue-light special" and moved it online. Today, the virtual blue-light special pops up on shoppers' computer screens at random times and is "just like the blue-light specials you see at Kmart," says Karraker.

As a result of these and other initiatives to lure shoppers to the site, traffic at BlueLight.com has increased a staggering 823% since early November, according to Karraker. And the company has reported that sales for early November through December were up 1,060%, compared with the same period in 1999.

Companies like BlueLight.com have also benefitted from customer experience enhancements like imaging technology. BlueLight, for example, has used Atlanta-based Iterated Systems Inc.'s MediaBin software to put thousands of product images up on its Web site every week to help customers get a better feel for what they're buying.

"No one has figured out the magic potion to keep people happy online," says Burt Smith, vice president of marketing at Iterated Systems.

"The images that are used help the buying decision," he notes. "It's a visual experience more than a brand experience."

Right at Home

Another company that has taken "the right way" toward trying to convert online visitors into customers, according to Rebecca Nidositko, an analyst at The Yankee Group, is Bellacor.com Inc., an online home furnishings company in Saint Paul, Minn. The company's strengths lie with its product specialists, who have experience in the home furnishing market and deep knowledge of its products, she says.

To date, the company has rivaled the likes of Walmart.com with a customer conversion rate of more than 4%, giving the company "long-term prospects for success," Nidositko says.

"Not all customers are created equally," says Jan Andersen, Bellacor's president and CEO.

"The key is to give people something compelling. We have integrated real people into the selling process," Andersen says, referring to the company's product specialists, who can walk customers through the buying process. "They become, in effect, your personal buying consultant."

Even more important than the impact on conversion rates, however, is the effect Bellacor's business model has on the bottom line, according to Andersen.

The personal shoppers are "able to up-sell the customer," he says. "Not only do we increase conversion rates, but we double the [sales] ticket."

The key to turning Web visitors into loyal customers, therefore, is the integration of real people into the selling process, Andersen says.

"With automation, you can buy or not buy," he says. "In our case, there's an in-between. We haven't thrown everything out with the bath water."

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

Dear Career Adviser:

I'm one of those stable people with an ERP consulting background who went to a New Economy company, and now I'm out interviewing. What's your recommendation on how to check out the information I'm getting from the companies that are interviewing me? — THE REAL SCORE

Dear Real:

Great data is available on the Internet, particularly if you vary your queries. For example, if you're looking to join a company in enterprise software, you might go to News.com, BusinessWire.com, VentureWire.com, Hoover's Online (Hoovers.com) or JournalistExpress.com and its parent company's Web site, CEOExpress.com. The last two are terrific meldings of multiple resources, and CEOExpress' "Ask An Expert" helps with specific questions.

Don't just search for the terms *enterprise software, enterprise resource planning* or the name of your potential new employer. Vary your query. Search for *layoffs, departing executives, downturns* and *funding* to see what's happening at your potential new employer and in the industry segment overall.

Also ask your interviewers whether Gartner Group Inc., Forrester Research Inc., Jupiter Research or any other analysts cover the company or its industry. If so, read the reports yourself.

Dear Career Adviser:

I'm a 40-year-old woman who quit working eight years ago to raise my daughter. I returned to school for a degree in computer programming and will graduate in May with an associate's degree in applied science. I'm in the top 10% of my class, with multiple awards and scholarships. I have a finance background and an earlier background as an executive assistant, managing international accounts for a large corporation in my area.

In order to get my degree, I have to complete an internship, and I've been a webmaster at a local bank since November. The bank wants me to work full-time after graduation, but I don't know what my starting salary should be. I don't want to be an entry-level Web developer candidate just out of college and completely sans experience, but I also know that $75,000 is unrealistic. My goal is to work from my home as a webmaster, and this company will allow this as well. — WEBMASTER MOM

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

Dear WM:

You will face several problems by choosing to work from home, says Trevor Cole, a technical recruiter at Cross Creek Systems in Seattle. First, working from home won't allow you to interact with colleagues and learn any new technology tricks and shortcuts.

Nor will it enable you to immerse yourself in the work environment — cross-platform and Internet technologies, including Oracle and SQL databases, CGI, Perl, Apache, Java, HTML and XML, as well as Internet security issues, he says.

Furthermore, you haven't been working for eight years, says Cole. Unfortunately, textbook experience isn't the same as hands-on experience, regardless of your honors and merits.

While $75,000 might have been realistic during the dot-com heyday, Web development positions now pay three- to five-year Web development veterans between $50,000 and $80,000, depending on experience, location and cost of living. However, with the recent layoffs and the current state of the market, a lot of good, talented people will work for less money.

Dear Career Adviser:

I have an MBA and currently work with call centers for a large shipping company. I've coordinated the call center return portion of an e-commerce project through our subsidiary. I'm interested in coordinating e-commerce projects in a management role. How technical do I need to be, and what's my potential to move from where I am now into a more senior role? — HEADSET ON

Dear Headset:

Managing a call center certainly helps you understand the basics of customer relationship management (CRM). These hot niche applications pull data from every contact point with customers, be it the Web, the phone, the mail or in person. All of the data gets pulled into one central database whose information is available instantly throughout the enterprise, letting the company sell, cross-sell and serve its customers appropriately.

To put your headset aside, you will need Web, database, business and e-commerce/CRM application skills.

Improve your technical knowledge by getting involved in an enterprisewide CRM implementation, such as one involving software from Siebel Systems Inc., Blue Martini Software Inc. or Intershop Communications AG, and apply that MBA to help an enterprise target its highest-potential customers. ◗

BRIEFS

AEA Calls For More Science, Math Funds

The AEA, formerly the American Electronics Association, last week called for more funding to improve science and math education at the primary and secondary school levels. It said that national standards for student performance are needed, as well as the removal of regulatory barriers to online learning.

In its rundown of top legislative issues, the Washington-based trade group also said it would push Congress to extend the Internet tax moratorium, which expires in October, and press for a federal law preempting the ability of states to set varying privacy rules.

TCP/IP Firm Targets B2B Exchanges

Southfield, Mich.-based ANXeBusiness Corp., which manages a private TCP/IP network, has signed a multiyear deal with Delray Beach, Fla.-based Wiznet Inc. to market and sell Wiznet online cataloging, database and searching services to business-to-business exchanges. Target markets include automotive, aerospace, energy and health care exchanges.

Job Moves

Network Associates Inc. last month named George Samenuk its new CEO and president. Samenuk previously served as CEO and president of Valhalla, N.Y.-based online business surplus exchange TradeOut.com Inc. and as an executive at IBM. In December, Network Associates lost its CEO, president and chief financial officer after announcing expected losses of $130 million to $140 million in the fourth quarter. The Santa Clara, Calif.-based developer of antivirus and PGP encryption software also named Terry Davis, the company's corporate controller, its acting CFO.

Naresh Lakhanpal was named U.S. practice director of products and services at New York-based Deloitte & Touche LLP's Technology & Communications Group, which helps companies in the global arena. Before joining Deloitte & Touche, Lakhanpal was director of wireless sales at Tandem Telecommunications Networks, a division of Compaq Computer Corp.

Jim Forrest, a 14-year veteran of Candle Corp.'s IT department, was named CIO at the El Segundo, Calif.-based software company. Prior to his tenure at Candle, Forrest worked in the IT department of Dresser Industries Inc.

Chris Richmond was recently named CEO of eCredit.com Inc., a Dedham, Mass.-based credit and financing company for online businesses. Richmond, who previously served as president and CEO of Danbury, Conn.-based GE Capital Commercial Equipment Financing, will also serve as a member of eCredit's board of directors.

Sharon A. Fordham, former head of global e-business at Nabisco Inc. in Parsippany, N.J., was recently named CEO of WeightWatchers.com Inc. in New York. Fordham will direct Internet strategy at WeightWatchers.com.

Burlington, Mass.-based eXcelon Corp., a business-to-business consultancy, recently announced the following promotions: Alan Gold to executive vice president of business development, Vittorio Viarengo to vice president of product management, Maryellen Abreu to vice president of support, Adam Abrevaya to vice president of engineering, and Gopal Nagarajan to vice president of worldwide services.

John Spotila, former chairman of the Federal CIO Council and administrator of the Office of Management and Budget's Office of Information & Regulatory Policy, was named chief operating officer at business-to-government IT services firm GTSI Corp. in Chantilly, Va.

Streampipe.com, an Alexandria, Va.-based Internet broadcasting services provider, recently named Joseph K. Fisher its CEO and Kurt Krauss its chairman. Fisher previously served as CEO at Burson-Marsteller in New York. Krauss was previously CFO at Burson-Marsteller Worldwide.

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TECHNOLOGY

VIRTUAL NET, REAL TAXES

The Internal Reveoue Service has invested $2.9 million to expand what's being called one of the biggest virtual private oetwork projects in the world. The network will securely link 16,000 field ageots to headquarters and to one another. ▸ 54

HITACHI SEEKS STORAGE NICHE

Hitachi Data Systems is aiming its newest RAID technology at the midrange storage-area network market with a scaled-down versioo of the company's Freedom Storage Lightning 9900. ▸ 54

SECURITY JOURNAL

In a world where users provide credit card informatioo without a thought to security — and retailers don't bother to check credit card identificatioo — how can security managers expect users to take passwords seriously? The answer in both cases, according to our columnist, may be smart cards. ▸ 56

CIA VENTURES TO NEW TERRITORY

The CIA is funding a venture capital firm, Io-Q-Tel, that invests in oew technologies that it says will benefit both the ageocy and corporate IT. Can James Bond in the boardroom be far behind? ▸ 58

FUTURE WATCH

Jef Raskin, best known as the creator of the Macintosh project at Apple, predicts that the desktop icons of current interfaces could go the way of the green screen. Graphical user interfaces will be replaced by interfaces that give users only what they oeed, he says. ▸ 62

QUICKSTUDY

Can't remember all the user ID numbers and passwords you need? Single sign-on offers an answer, simplifying life for both users and administrators. It's an autheotication and authorization mechanism that lets a user log oo to a system just ooce and thereafter be authorized to access other connected systems without additional log-ons. ▸ 64

EMERGING COMPANIES

NetByTel develops and hosts voice-enabled applications that let customers interact with and order from e-commerce Web sites. Companies pay hy the transaction, which lowers the upfroot investment. But for some, building inhouse may be a better idea. ▸ 65

TRENDSETTERS

The souring ecooomy is putting new pressure oo the IT job market. What's a job seeker to do? IT career expert Phil Schneidermeyer gives his advice to candidates who desire high-level IT jobs, oow that the era of expansion seems to be over. ▸ 66

AN EYE ON THE COMPETITION

GATHERING COMPETITIVE INTELLIGENCE over the Internet is a serious game that can be played in many ways. There's a wealth of information readily available, and it can offer a surprising amount of insight into the competition's next move. Savvy companies are keeping close tabs on competitors in a variety of ways. Here's how high-tech professionals spy on their rivals.

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BRIEFS

Caldera Rolls Out Software for Linux

Caldera Systems Inc. has released Volution, Linux network management software that was designed to make it easier to remotely install and maintain Linux systems across networks using a browser interface.

Volution, which is priced at $2,995 for up to 10 nodes, will let network administrators use system policies and profiles to reduce costs and improve reliability by monitoring hardware and software inventory and configurations, according to Orem, Utah-based Caldera.

Colombia Connects To Wireless Web

Software maker Brience Inc. in San Francisco just signed a deal with Bogota, Colombia-based wireless service provider Comunicaciones Celulares SA (Comcel) to provide Internet access on cell phones for Comcel subscribers. Comcel has more than 1 million cell phone subscribers.

Dell Adds Sendmail to PowerEdge Server

Dell Computer Corp. said last week it will bundle the commercial version of Sendmail into its PowerEdge 2450 server. The server from the Round Rock, Texas-based computer maker runs on Red Hat Linux, has 2GB of memory and up to 180GB of storage.

The bundles are sold in three configurations of e-mail software from Sendmail Inc. in Emeryville, Calif., ranging from 4,000 to 15,000 mailboxes.

Starwood Hotels Try Wireless White Glove

Hotel managers at various locations of White Plains, N.Y.-based Starwood Hotels & Resorts Worldwide Inc. this week get their first look at a Pocket PC wireless handheld application for room inspectors. Starwood, which includes Sheraton and Westin hotels, worked with San Diego-based hospitality industry wireless firm Ameranth Technology Systems Inc. to develop the system.

IRS Connects Agents With Expanded VPN

New secure network ties 16,000 field agents to headquarters

BY DAN VERTON

The Internal Revenue Service slapped down $2.9 million last month to kick-start what is being called one of the biggest virtual private network (VPN) projects in the world.

The IRS's new Secure Dial In (SDI) project is based on VPN technology from SafeNet Inc., a Baltimore-based Internet security firm. The agency recently equipped more than 16,000 field agents with VPN-ready laptop computers and smart-card-based digital identities that give them secure remote access to IRS files. By the end of next year, SDI will serve more than 30,000 IRS field agents nationwide, according to the agency.

"This might be the largest VPN deployment anywhere at this point in time," said Tony Caputo, CEO of SafeNet, which has a long history of supporting large-scale government enterprises with VPN systems. The firm helped develop a State Department VPN to securely connect all U.S. embassies around the world to Washington, he said.

The SafeNet SDI system consists of a combination of products, including Smart, SafeNet's PC card-based VPN client software; Speed, a scalable VPN gateway, and Enterprise Manager, which makes it possible for the IRS to assign and manage security policies from a central location.

Full-Time Support

As part of the IRS deal, SafeNet will provide full-time technical resources to support the implementation.

Through the SDI system, IRS agents can remotely carry out a broad range of sensitive transactions, such as inspections, tax collections, appeals and criminal investigations. The agents can use the VPN-ready laptops in the field to transmit information via satellite links back to IRS headquarters in New Carrollton, Md. And they can use smart cards in conjunction with the laptops to authenticate their identities, roles and access permissions to the IRS network.

"This process is a little bit more secure than what you might normally find in a standard VPN," said Al Whitley, director of telecommunications at the IRS. "It requires people have an ID card that is verified with a token. It goes beyond the standard encryption."

SDI has grown gradually since it was first envisioned in 1997, said Whitley. It started out with a mere 19 users, grew to 1,800 users in 1999 and topped off at 16,000 at the end of last year, he said.

Controlling Access

By using SafeNet's policy management capabilities, the agency is able to control "who can talk to who and under what circumstances they can do so," Caputo said.

"It was important for tax agents to have good information on the taxpayers when they were working on their cases remotely," said Whitley. "Before this project, they would have to go back to their office and pull the information up. Now they can pull it up on their laptops the night before in a hotel."

The IRS maintains a second processing center in Martinsburg, Va., where it stores back-up copies of the enterprise access policies for use in the VPN, as well as user passwords. This allows for quick recovery in the event of a major failure or disaster, according to Caputo.

The agency uses a global toll-free dial-in number that agents can use to access a 56K bit/sec. line regardless of where they are, said Whitley. The regional dial-in nodes also provide load-balancing, so if any one node receives too many calls, some calls will be transferred to another node, said Whitley.

The same is true for the system's policy management, said Caputo. "If the IRS were to lose one of those sites, it automatically shifts the overall policy authority to the other site so the users never lose their access," said Caputo.

Although the IRS SDI project is the largest VPN he is aware of, Eric Hemmendinger, a security analyst at Aberdeen Group Inc. in Boston said it's no surprise to see a VPN of that size. "VPNs are the single fastest-growing area in security," he said. But VPNs that grow beyond an organization's networks face challenges because interoperability "is in a state of flux," he added.

VPN Terms

X.509: A widely used specification for digital certificates. **X.509** binds an entity's unique name to its public key.

DHCP: The **Dynamic Host Configuration Protocol** allows a server to assign IP addresses to connected computers on the fly.

IPSec: **Internet Protocol Security** is a set of security measures for verifying the originating address in the headers of packets sent over the Internet.

L2TP: **Layer 2 Tunneling Protocol** is a standard tunneling protocol for virtual private networks. L2TP also supports non-IP protocols, including AppleTalk and IPX.

Triple DES: The **Data Encryption Standard** is a 56-bit private-key algorithm developed by IBM for encrypting data. With **Triple DES**, the algorithm is applied to the data three times in succession.

Hitachi Aims At Midrange SAN Market

BY LUCAS MEARIAN

Hitachi Data Systems Corp. is targeting its newest RAID technology at the midrange storage-area network (SAN) market with a scaled-down version of the company's Freedom Storage Lightning 9900.

The Freedom Storage 9200, code-named Thunder, is a compact, Fibre Channel-based technology for the enterprise-class storage market with two to four times wider bandwidth than its predecessor, the Freedom 5800, according to Hitachi. The rack-mounted RAID device scales from 720GB to 7.2TB of capacity and offers features formerly only available on higher-end systems, such as remote and snapshot copying, said Hitachi.

Possible Primary Storage

Santa Clara, Calif.-based Hitachi is shooting for a spot in the marketplace between Hopkinton, Mass.-based EMC Corp.'s new Clariion IP4700, a network-attached storage device that holds about 3.5TB of data, and EMC's high-end Symmetrix storage system.

Mike Kahn, an analyst at The Clipper Group Inc. in Wellesley, Mass., said that while the 9200 box is targeted at large corporations that would use it to complement larger storage systems, midsize companies could also consider it for a primary storage box.

According to Hitachi, the Thunder 9200 can offer up to 99.999% availability, depending on the number of redundant devices added to it.

"The 9200 is a high-performance box that may be a little brother to the 9900, but it still has an awful lot of performance," said Kahn. "It's one-upping Clariion in many ways and has some characteristics of the Symmetrix, which almost makes it a new category."

Hitachi began shipping the 9200 last month at a cost of 4 to 6 cents per megabyte of storage. Prices range from $15,000 to $300,000.

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Hitachi Aims At Midrange SAN Market

BY LUCAS MEARIAN

Hitachi Data Systems Corp. is targeting its newest RAID technology at the midrange storage-area network (SAN) market with a scaled-down version of the company's Freedom Storage Lightning 9900.

The Freedom Storage 9200, code-named Thunder, is a compact, Fibre Channel-based technology for the enterprise-class storage market with two to four times wider bandwidth than its predecessor, the Freedom 5800, according to Hitachi. The rack-mounted RAID device scales from 72GB to 7.2TB of capacity and offers features formerly only available on higher-end systems, such as remote and snapshot copying, said Hitachi.

Possible Primary Storage

Santa Clara, Calif.-based Hitachi is shooting for a spot in the marketplace between Hopkinton, Mass.-based EMC Corp.'s new Clariion IP4700, a network-attached storage device that holds about 3.5TB of data, and EMC's high-end Symmetrix storage system.

Mike Kahn, an analyst at The Clipper Group Inc. in Wellesley, Mass., said that while the 9200 box is targeted at large corporations that would use it to complement larger storage systems, midsize companies could also consider it for a primary storage box.

According to Hitachi, the Thunder 9200 can offer up to 99.999% availability, depending on the number of redundant devices added to it.

"The 9200 is a high-performance box that may be a little brother to the 9900, but it still has an awful lot of performance," said Kahn. "It's one-upping Clariion in many ways and has some characteristics of the Symmetrix, which almost makes it a new category."

Hitachi began shipping the 9200 last month at a cost of 4 to 6 cents per megabyte of storage. Prices range from $15,000 to $300,000.

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Culture of Indifference Plagues Password Security

From credit cards to corporate passwords, users are blissfully unaware of today's security issues

I STRONGLY SUSPECT I'm being hypocritical again. When asked about the difference between passwords and super-duper high-security cryptographic authentication protocols, I can wax quite lyrical about how tools such as LOphtcrack have made the password a thing of the past. I will stand with my consulting colleagues and explain that the fast-paced demands of the modern e-commerce-enabled business world have rendered cryptographic authentication a bare minimum.

There. Can you tell I was trained by management consultants?

Compare and contrast this with my attitude toward credit cards. I'll happily give my credit card number out over the phone, give it to unknown waiters who promptly vanish into a back room, or even leave carbon copies of Visa invoices with market traders. All terribly dangerous behavior, I'm sure you'll agree. It's a wonder how I've managed to avoid being on the receiving end of some nasty credit fraud. No doubt every card-fraud professional reading this is drawing in their breath with a little 'tsk' noise and knowingly saying to themselves that it's only a matter of time before the statistics catch up with me.

Security Manager's Journal

Flirting With Danger

It's not just my lackadaisical approach that's to blame here: Retailers seem to be equally careless. I've been conducting a little experiment during the past six months, ever since I first noticed that the signature on my credit card was so worn as to be completely illegible. I was going to get a new one, but then my curiosity began to get the better of me and I decided to see how long I could get away with a card that could belong to just about anyone.

In six months, I've been questioned five times, and I've never had the card refused. Four people asked to see another copy of my signature, so I showed them the signature on the back of another card. The fifth person went that little bit further and made a basic check to see if the names on the two cards matched. I'm told that we're much more conscientious about credit card security in Europe than in the U.S., so I can only guess at how easy card fraud is over there.

This squares quite well with a piece of research conducted a few years ago to test how well photos on credit cards worked. The researcher split a team of students into three groups and gave each of them new credit cards with identification photos on them. One group had cards with their correct photos on them; the second group had cards with photos of random people; the third group had cards with photos of famous or infamous people — I believe these included Micky Mouse and Adolf Hitler.

Every reader with the slightest dose of cynicism can guess what's coming next — all three groups got past their target retailers without any problems. Who knows? Maybe the store clerk thought the Micky Mouse card was a Disney affinity card. If so, I shudder to think what he thought about the Hitler card.

Yet despite these simple displays of how unreliable the whole process of identifying credit cardholders may be, credit cards are an integral part of the modern economy. They work. Yes, there's an underlying level of fraud that no doubt gives my counterparts at the credit card companies sleepless nights, but we still accept them as useful tools.

Getting Smart

Credit card companies are finally responding to this problem by introducing the next generation — smart cards. While they won't get around the problem of the three-quarters-asleep store clerk, cards like the American Express Blue card will help eliminate a lot of the card-cloning and card forgery activities that make up much of the problem. Any good economist will tell you that eventually that'll save you money too, though you'll never notice it directly.

Smart cards aren't a new technology. They've been around for years, but card companies seem to be only just waking up to their potential. Why didn't they do this long ago?

The reason is one of economic inertia. Fraud costs the credit card companies a great deal each year, but it will cost them much more to develop and roll out the new smart card infrastructure. In the long term, the reduced fraud costs will more than repay their investment, but it's still hard to build up enough determination to put up that large, up-front capital investment.

Easy Passwords

This, of course, has absolutely nothing to do with my job. Passwords, however, have a lot to do with my job. In every company I've been in — and the current one is no exception — many people use easily guessable passwords like password or fred.

If you adopt a strong password policy, they'll find a way around it. Insist on eight-character passwords — fredfred. Ban dictionary words — derf. Insist on alphanumerics — fred01. Ban the reuse of old passwords — fred02, fred03. . . .

This is all very similar to the problem of signatures on credit cards: a vague step in the right direction, sure, but incapable of standing up to a determined attacker — or even a lazy attacker who happens to have a few minutes to spare.

The next time anyone recommends that you tighten password standards, try the "fred01" argument on him — I bet I know what his response will be: "Well, that's a matter of education. We've got to educate the users." That sounds to me like the old "Never mind, there's plenty of time to change his habits after I marry him" line. Good luck. After all, did any credit card company ever manage to educate you into following their security procedures?

Like signatures on credit cards, passwords on systems stop only the most casual of attacks.

Like the new Amex smart cards, better technologies than passwords have been around for years but you've got to make that up-front capital investment. Unlike the credit card companies, no company I know has ever managed to successfully replace passwords. But I'm hoping to do so with smart cards.

Are there any readers out there who can speak to this issue? Drop into the Security Manager's Journal forum at *Computerworld.com*. I'd like to hear about your experiences.

THISWEEK'SGLOSSARY

"Fred" passwords: An early hacking text listed "fred" as one of the world's most popular passwords. Why not "john" or "bob"? The keys f-r-e-d are right next to one another, making it easy for one-fingered typists. For those of you who haven't had their morning coffee yet, "derf" is "fred" backwards.

LINKS:

www.l0pht.com: Visit this Web site to download L0phtcrack, a powerful and easy-to-use password-cracking tool for testing the security of your Windows NT passwords.

www.ftp.cl.cam.ac.uk/ftp/users/rja14/tr500.pdf: Visit the Cambridge University FTP (file transfer protocol) site to download a very good, practical paper on password security from the noted security researcher and professor Ross Anderson.

SECURITYBOOKSHELF

Here are a few books on security topics that I have perused and put on my reading list. All of these titles looked promising enough to make me go out and buy them. Your comments are welcome in the Security Manager's Journal forum. Go to the Security Community page at *Computerworld.com*.

Hacking Exposed: Network Security Secrets & Solutions, by Joel Scambray, Stuart McClure and George Kurtz (Osborne/McGraw-Hill, 2001). I've had this book for ages, and I've been meaning to sit down in the lab and try to re-create some of what it says in practice. The only problem is that I don't have a lab. The book has so much technical detail that I'll never remember anything unless I try it out. Recommended by the Ernst & Young International penetration testing team.

Network Intrusion Detection: An Analyst's Handbook, by Stephen Northcutt (New Riders, 1999). This book was highly recommended by a colleague who's been concentrating heavily on intrusion detection recently.

● This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager – let's call him Jude Thaddeus – better solve security problems. Contact Jude at jude.t@lycos.com or click on *Computerworld.com*'s Security Watch community forum to participate in discussion topics.

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CIA-funded venture capital firm In-Q-Tel is investing in new technologies that will benefit both the agency and corporate IT.

By Gary H. Anthes

Q, THE LEGENDARY GADGETEER of the James Bond films, gave Agent 007 things like a radio transmitter hidden in a hairbrush, artificial skin fingerprints and a fountain pen that doubled as a listening device.

Today, it's more likely that Q would give the master spy a personal digital assistant with self-protecting data, a device for encrypting fingerprint profiles and software for detecting collusion among criminals. In fact, those very items — and a great deal more technospookery — are making their way from Silicon Valley to the CIA, thanks to a bold, year-old experiment in government procurement. The idea is to move U.S. agents into the 21st century, but a side benefit is likely to be the creation of powerful and secure commercial tools for information acquisition, analysis and distribution.

The bridge between technology developers, the CIA and users in corporate America is In-Q-Tel Inc., a nonprofit venture capital firm created by the CIA in late 1999. Armed with $28.5 million in spy agency money, In-Q-Tel (the *Q* is for Bond creator Ian Fleming's fictional inventor) last year considered some 500 vendor pitches and funded about a dozen development projects.

"We have succeeded at luring companies to come in and show us stuff that even we are shocked by," says Christopher Tucker, chief strategist at the Arlington, Va.-based firm. "Often, these weird solutions are only weird because they are new. As soon as you see them, you think, 'My God, everyone is going to do that.' But right now, only some narrow niche industry uses it, or maybe some little company hasn't even announced it yet."

Taking a Gamble

One such "niche industry" is that of gambling. Systems Research and Development (SRD) in Las Vegas developed collusion-detection software that can spot cheaters and card counters by correlating information from multiple sources about relationships and earlier transactions. The software could, for example, warn a casino that a job applicant once shared an address with a known criminal.

The CIA will soon set up a pilot project to see how the SRD system might be adapted to spy work. "What the intelligence process works on is connections," says a senior CIA official who asked not to be named. "So if you have some group of bad guys over here, and you can find one of them, then there's this whole art and science of finding out who he visits, who he's connected to and so on." The software might also find extensive use in industry to aid in fraud detection, the CIA official says. "This is an area where we have some considerable expertise, and we can work quite constructively with SRD."

Although In-Q-Tel may fund new products from scratch, it typically finds existing products that might be useful to the CIA if enhanced — say, for better security — or prototypes that need additional work. To get funded, a technology must hold promise for use in both the CIA and the commercial world.

Search Advances

For example, SRA International Inc. in Fairfax, Va., has for some time had a commercial search engine called NetOwl that uses natural-language processing rather than keywords to find information. The text-mining tool can deduce that a word is a person's name, an organization or a place.

In-Q-Tel has greatly increased the power of NetOwl by funding enhancements that let it identify events and relationships and create structured data from unstructured text using XML. According to SRA Vice President Hatte Blejer, it could find on the Internet the answer to this question: "Which high-tech companies were established in Northern Virginia last year?" That's something an ordinary search engine would find difficult at best.

Conventional search engines are fine for looking for bargains on digital cameras, the CIA official says, but not for the kinds of rigorous searches that analysts at the CIA and many private firms want to do.

"There are more than 1,000 newspapers online, but it's hard to read 1,000 newspapers," the CIA official says. The work on NetOwl — and other technologies the CIA won't talk about yet — will make that possible, he says. "We are going to make a big push in the whole area of Internet search, Internet data mining, foreign language search and translation and so on," he says.

"Intelligence analysts and corporate intelligence analysts are typically working on a particular area," says Paul A. Strassmann, a former CIO who is adjunct professor of information warfare at the National Defense University in Washington and a *Computerworld* columnist. "What they want to do is compile a workbook and capture into that workbook things that don't necessarily have keywords." Analysts want to have a dialogue with their search engines and want them to learn in a Socratic process, he says. Popular commercial search engines are "feeble" by that standard, he adds.

In-Q-Tel was the brainchild of Ruth David, the CIA's deputy director for science and technology from 1995 to 1998. "When I joined the agency, one of the things that became rapidly clear was, by virtue of being government and having a culture of secrecy, people were pretty insulated from the state of the art in IT," says David, now CEO of Analytic Services Inc. in Arlington, Va. The agency was used to working with big defense contractors but not the newer, smaller firms where much of the IT innovation was coming from, she says.

The CIA official, who has ties to In-Q-Tel, says the notion of a top-secret agency funding people without security clearances was hard for many at the CIA to swallow. "There was some jealousy and some suspicion," the official says. "Any organization that gets paid to be paranoid is going to be a little suspicious." But a consensus in favor of In-Q-Tel has emerged at the agency. "We have turned a lot of minds, and we have established credibility, but there are still people who are not sure," says the official.

Briefings Go Online

In-Q-Tel will help move the CIA out of a paper-dominated world, the official says. The agency took its first step in that direction when it teamed with In-Q-Tel-funded companies to develop the Presidential Intelligence Briefing System (PIDS), which is used to produce the daily brief for 16 senior government officials. Formerly, CIA analysts read and shuffled hundreds of paper intelligence cables each day in order to produce the daily brief.

Now PIDS, a "briefer's portal," brings the cables into a Lotus Notes database, performs a variety of searching and analysis functions, and then puts the brief on a notebook computer. PIDS is built around Notes Release 5, NetOwl and a prototype document annotation tool developed by Fuji Xerox Co. in Tokyo.

Lou Clark, a program manager at In-Q-Tel, says PIDS delivers briefs that are more timely because information can be added easily at the last minute. And because the notebooks can hold a lot of background information, briefers can answer questions on the spot, rather than having to return to the CIA to dig for answers, he says. PIDS will be developed into a commercial product, Clark says, but he declines to give details. He says it will find use in organizations with analysts who must find, organize and present data from multiple sources.

And there are many such organizations, David says. "We are all facing the challenge of analyzing and fusing data, spotting anomalies and trends and natural-language processing," she says. "The whole litany of topics relevant to intelligence problems are relevant to many commercial problems as well."

Mobile Security

The CIA is clearly mindful of the dangers of analysts traveling with computers loaded with top-secret material, and portable-device security will be a major concern for In-Q-Tel in the coming months.

"The nightmare is, you travel to some city, you go out to dinner, and someone breaks into your hotel room and puts a little thing into your computer," the CIA official says. "You come back from dinner none the wiser, and from that day forward, your computer is completely compromised."

Security work will involve tamper detection, biometric authentication, cryptography, self-protecting data, secure enterprise storage and more, the official says. The CIA is working jointly with the National Security Agency in some of those areas, he adds.

The In-Q-Tel-sponsored security technology will be commercially available, the official says. "But how can that be? Won't people figure out how to reverse-engineer it and defeat it?" he asks. "That's a challenge, but the right approach will be like public cryptography. It can be totally public and very secure."

DAVID ALAN WOOD

iSpy

Uncovering information on your competitors is easier than ever on the Web, while safeguarding your own information is becoming increasingly difficult. Here's how high-tech pros spy on the competition. By Peter Wayner

GATHERING COMPETITIVE intelligence over the Internet is a deadly serious game that can be played in many ways. There's a wealth of information readily available, and it can offer a surprising amount of insight into the competition's next move. Savvy companies are keeping close tabs on competitors in a variety of ways.

Ross Stapleton-Gray is the head of competitive intelligence at Sandstorm Enterprises Inc., a Cambridge, Mass.-based computer security firm. His job is to watch companies whose products might knock Sandstorm's out of the market. He spends his days trolling the Internet for often small bits of information that might add up to deeper insights.

In the past, information in local newspapers rarely traveled farther than the town line. Now, the Internet often makes information from those newspapers widely available to anyone who wants it. "We're following a company in Texas," Stapleton-Gray explains. "The local Texas business rag follows companies in town. They cover plenty of stuff that doesn't come out in press releases. The latest was a puff piece about how this company saw itself as an acquisition target."

That tidbit helped him understand how the company's management may be planning for the next year; trying to be acquired is a different game than trying to remain independent.

But how do you go about getting competitive intelligence? It turns out that there are lots of potential sources available on the Internet. Though a given Web site may be intended for one particular purpose, it may also reveal other useful information about companies and individuals.

Often, the interesting information about a company isn't on its Web site. Stapleton-Gray, for instance, says he enjoys watching job-posting boards for news about companies like his. While the descriptions are often intentionally vague, many times, they can't completely conceal a company's identity from a skilled reader.

"I was following a company locally, and on a local mailing list, someone wrote, 'I'm looking to join a company,' " Stapleton-Gray says. "His vague description seemed to match a company I was watching. Given that the start-up would be competition for us, I kept in contact with him over the next several months. How's that company coming? It hasn't got a prayer."

One executive who asked for anonymity says, "I watch our competitor on a regular basis and keep a running tally of who's on their staff or not." When he sees good people, he considers hiring them. If they don't match his needs, he passes their names on to a headhunter. He says that anyone "peeled off the competitors isn't a bad thing."

> I think that companies are exposing far more proprietary information than they ever imagined.
>
> SIMSON GARFINKEL, AUTHOR, *DATABASE NATION*

The marketplace is responding to the need for competitive intelligence. Web sites that focus on providing specialized data are popping up, along with products that help people search the Internet for information about rivals.

John Fisk is director of business development at Caesius Software Inc., a Seattle company that has developed a Web-searching tool called WebQL. The product is a sophisticated engine that will download a collection of Web pages and search for particular patterns. "The functions or commands are kind of a combination of Perl and some regular expressions to find patterns in the HTML," he explains.

Fisk says that some Fortune 500 companies use his tool to watch their competitors. "Let's say you had a retail site out there and you were competing with the big brick-and-mortar and online sites. We've already written queries that track the product mix, the price or the percentage discounts. We can categorize it by [stock-keeping units] or product or anything," he says.

Once these scripts are written, they can be run periodically to watch how businesses change prices and discounts. Book authors, for instance, have been known to write scripts that visit Amazon.com every hour and record their books' positions on the best-seller list.

Another firm, RivalWatch.com Inc. in Santa Clara, Calif., also writes proprietary scripts that download information for its customers from competitors' Web sites and then produces reports. RivalWatch focuses on adding some analysis and presenting the data in a useful form. It specializes in surveying digital commerce sites so customers can be sure they're pricing items competitively.

"We present the data in a form [that let's you] make a business decision," says Ann Hsu, vice president for business development and a co-founder of RivalWatch. "Just giving you a spreadsheet with the prices of 10,000 products is not helpful. Only 5,000 are a direct overlap with your site, and out of these, we summarize the price differences. So you can see [that one group of] products is competitive, but these [others] are 25% higher."

RivalWatch is expanding the types of analysis it performs. Many clothing retailers, for instance, can't compare their products directly with competitors' because their products use slightly different fabrics, colors and designs. RivalWatch offers scripts that break down information based on the product type and price range.

"We let you know, for instance, how many shirts we have between $15 and $25," says Hsu. "This kind of analysis is traditionally done, but it's harder. No one can go into a store and count how many shirts are available."

Sucking Up the Data

Hoover's Inc. is one of the preeminent online services that offers free and subscription-only information about corporations around the country. Austin, Texas-based Hoover's bundles basic news with its own information about thousands of companies.

Subscribers, for instance, can look at a corporate profile marketed under the name "Hoover's Intelligence Monitor" that includes information about a company's managers, products and sales.

Hoover's also offers customized analysis that compares a company's statistics against those of any three rivals. For example, you could use it to see that a firm's debt is significantly higher or its net profit margins are lower than competitors'. These figures can be compiled

on the spot using the information in Hoover's database.

"The advantage we have is that we have a database of more than 50,000 companies that we can sift and sort to get the exact information for a competitor," says Laura Raun, an executive producer at Hoover's. The company is counting on the quality of its database and the thoroughness of the individual company reports it prepares in-house.

A number of other companies are also aiming at building similar portals for business users seeking competitive intelligence. Many of the old standards like Dow Jones & Co. and Moody's Corp. are on the Web, while new firms such as Business.com Inc. and Office.com Inc. are trying to muscle into the market. Still, the quality and depth of the information varies widely among the sites, which often take different approaches to gathering information.

Closing Open Doors

The growing interest in intelligence-gathering has also prompted a corresponding fascination with blocking access to information to prevent competitors from spying.

Computer security continues to be a hot area for research and investment, and corporations are looking at ways to minimize and control the information getting out from behind their walls. Some corporations scan outgoing e-mail for sensitive documents, while others monitor Web site use. Still, loopholes can emerge where you least expect them.

Simson Garfinkel, author of the book *Database Nation: The Death of Privacy in the 21st Century* (O'Reilly & Associates, 2001), advocates keeping a careful watch on Web sites, file transfer protocol (FTP) servers and the other ways companies share information. Often, people don't realize how much is leaving through forgotten doors, he says.

"I think that companies are exposing far more proprietary information than they ever imagined," Garfinkel says. "Internet search engines like Google make it easy to find it faster than ever. If you search for 'secret' or 'proprietary,' you'll find real secret or proprietary documents."

Getting such documents back can be impossible once they leave a company. Google, for instance, keeps a cache of all pages it visits. Deleting a file from a Web site or an FTP server won't remove it from Google's cache. Web sites are often visited by hundreds of Web-crawling indexing robots, and it's impossible to know which ones have saved copies of documents.

Of course, businesses also have to balance the need for secrecy with the need to communicate. Locking up all of the information on Web sites and FTP servers may seem like good practice until it starts to make life difficult for legitimate customers.

For instance, you can make life simpler for spying rivals by making prices easily available on the Web, but at the same time, you're encouraging browsing by potential customers. After all, forcing people to contact a sales force to get a price may drive away more business than it protects.

Hsu says businesses "have all these constituents they're trying to serve and only one party they want to protect against — that's their competitors. But there are so many other parties that you want to give [information] to, so you can't really hold it back. In business, you often choose to gain customers rather than keep away rivals."

Wayner, a freelance writer in Baltimore, is the author of Free for All, *a book about the free software movement (Harperbusiness, 2000). Contact him at pcw@flyzone.com.*

The Interface Revolutionary

The mouse and desktop computer could go the way of the green screen, says the father of the Macintosh. By Mathew Schwartz

TWENTY-FIVE YEARS AGO, computer screens were small and green. The desktop computer and mouse, which users take for granted today, were far from mass adoption. So it's safe to guess that in 10 or 20 years, the desktop might be replaced by something we don't currently comprehend. To get a taste of what's in store, *Computerworld* spoke with **Jef Raskin**, best known as the creator of the Macintosh project at Apple Computer Inc. Raskin's latest book, *The Humane Interface: New Directions for Designing Interactive Systems* (Addison Wesley, 2000), highlights the impersonal nature of most current interfaces and argues for a revolution to create better ones.

Q: Why bother with new interfaces? Isn't the Macintosh interface – which you helped design – good enough?
A: First of all, this is not a Mac issue. It's not a Wintel or Linux or Sun issue, either. It's a human issue. I have yet to meet a computer user who is happy with the way computers treat them. And most of their pain is caused by bad interface design. That includes overcomplex software, nonexistent manuals and help systems that themselves need help. It's been 22 years since I started the Mac. And a lot more is known now than nearly 30 years ago when Xerox Parc [Palo Alto Research Center] was first using [Douglas] Engelbart's mouse and inventing windows, with a small *w*. Forcing users to still work with current interfaces is like giving them the old 640-by-480-pixel screens and slow processors we used back then.

Q: What benefits would users derive from improved interfaces?
A: Anytime you make a system faster to use, easier to learn and less frustrating, there are psychological benefits tn the individual user and bottom-line productivity benefits to the enterprise. There are also physical benefits: an interface that takes fewer keystrokes and less "mousing around" creates less repetitive stress injuries.

Q: Will users bother with new interfaces?
A: You can't imagine how many times I was told that nobody wanted or would use graphics-oriented interface widgets when I was creating the Macintosh, and I kept oo hearing that eveo after it was released. Now, flawed though they might be, everybody uses them.

Q: How do you think interfaces should evolve during the next five to 10 years?
A: That's a huge question. In general, present interfaces overuse the mouse and icons and rely on methods that we know now to cause users to actually make errors. Also, we turn the Web into a maze of little rooms with opaque doors called tabs [the tabbed navigation bar in use at many e-commerce sites today] and URLs, so that you can't see where you're going.

Q: What about recent forays into adaptive interfaces, such as in Microsoft Corp.'s Office 2000 menus?
A: Adaptive interfaces are a disaster. Wheo an interface "adapts," it changes without warning, and you suddenly have a oew interface where things work differently or the menus are mixed up. Windows 2000 has some adaptive features, and every user report I've seen says that they are a nuisance. What people want is a stable environment that works well from the get-go, doesn't crash, doeso't lose your work or even lose your place, and which doesn't change.

Q: Does Linux offer hope of interface salvation?
A: That's a big disappointment. I like Linux, but the developers keep designing what are, at best, puerile improvements oo standard GUIs [graphical user interfaces]. You cannot design interfaces in a piecemeal way.

Q: Will new interfaces somehow replace the need to learn new programs?
A: The new interfaces I've designed do just that. In my current interface deaigns, everything you need is laid out for you. You just zoom in, and as soon as you can read the text or see the graphic details, you can work on them. Then there's no need for windows, which you are forever opening, closing, moving or fooling with.

Q: Don't different software applications require different interfaces?
A: Well, it is possible to integrate all applications into one uniform structure that you'd learn quickly and then never have to relearn or unlearn. You almost never use all the features of an application. I doubt if there are 10 people on the planet who know every command In Microsoft Office. One part of the solutioo is to he able to add just the commands you need and not have to pull in a gargantuan application.

Q: How has your zooming interface fared with users?
A: The user testing we've done shows that people learn these interfaces in minutes and come to love them very quickly. They also find that it's hard to go back to a stodgy old Mac or Windows GUI, which is why I know that once the new interfaces get out there, they will eventually take over.

Q: How will radically new interfaces come to market?
A: It's oot the kind of thing where you can make dinky, evolutionary changes, unfortunately. It will take a company as bold as Apple used to he to introduce a new interface idea. On the other hand, it is one of the few opportunities that a company would have to become a billion-dollar player in the PC, PDA [personal digital assistant] and other information appliance game.

Right now, we have gone to the right, to the leveling-off portion of the S-curve of PC and most software deliveries. The exciting, exponential growth phase is over. But a new interface that truly integrates PCs, PDAs, wireless and the Web could start up the growth engine all over again.

> I like Linux, but the developers keep designing ... puerile improvements on standard GUIs. You cannot design interfaces in a piecemeal way.
>
> JEF RASKIN, CREATOR, MACINTOSH PROJECT

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Single Sign-on

BY PETE LOSHIN

LOGGING ON is hard to do, especially if you need to remember a different user ID and password (or passphrase) for each different system or resource. If you use passwords that are easy to remember or a single password for all of your accounts, security specialists wag their fingers: "Easy to remember" also means "easy to guess." The experts warn against reusing passwords and writing those passwords down anywhere that an attacker might find them. Oh, yes, they add that you should change each of your passwords frequently.

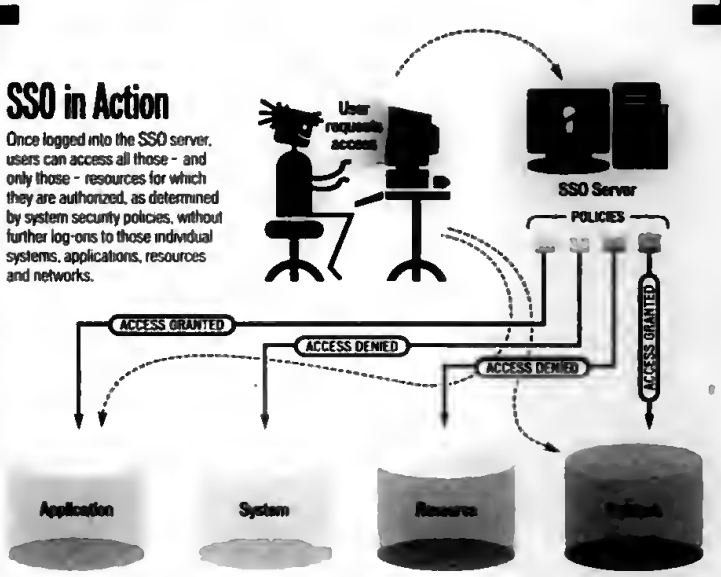
Thus, it's little wonder that IT managers have been embracing the idea of single sign-on (SSO) services in recent years: Administrative and support costs can be significantly reduced when users have only one password to forget, and the overall environment can be made more secure.

DEFINITION

Single sign-on is an authentication and authorization mechanism that permits a user to log on to a system just once and thereafter be authorized to access other connected systems without additional log-ons.

SSO in Action

Once logged into the SSO server, users can access all those – and only those – resources for which they are authorized, as determined by system security policies, without further log-ons to those individual systems, applications, resources and networks.



What Log-on Entails

Although the process of logging on to a system seems simple — enter your user identification name and then your password — it actually sets several actions in motion. The first, authentication, occurs when the system verifies that the entity (person or program) logging on is the entity associated with that user identification, usually by matching the password with the user ID [QuickStudy, March 27].

Authorization comes after the user is authenticated and tries to access the system resources. The user may be authorized to view files but not to delete or modify them. The system responds to unauthorized requests with an error message and responds to authorized requests by allowing the desired access.

The actual authorization might happen immediately after authentication, with the client getting a list of authorized resources. Or the authorization might be interactive, with the server denying or allowing access to individual resources when a user first tries to access them.

In technical terms, SSO lets a user log on to a primary domain but have access to other, secondary domains. For example, a Novell NetWare network might represent one domain, a Windows NT network another, an IBM mainframe yet another and so on. Under normal circumstances in multiple sign-on environments, the user must log on separately to each secondary domain.

With SSO, the IT manager specifies a particular platform as the primary authentication domain to control access to all domains. When a user logs on to the SSO primary domain, he provides all the credentials he will need to log on to any of his secondary domains. The primary domain then takes care of authenticating the user to the secondary domains.

At its simplest, SSO is implemented so that each user has an account with an authentication server, which stores all user IDs, passwords and other account information. The server authenticates the user once and then passes user ID and password information to other domains as needed.

This approach simplifies things for users, who need to remember only one password. Unfortunately, it doesn't help administrators much, because they must still set up separate accounts for each user on every authorized domain and manage each domain's authentication information separately.

A better approach to SSO lets IT managers tighten security and reduce overhead costs while making users' lives easier. Instead of hiding a complex multiple sign-on environment behind a single account on an authentication server, more advanced SSOs implement security through policies that determine a user's access in different domains.

Managers set policies for individuals and groups that allow appropriate access to network resources. For example, one policy might authorize customer service clerks for read-only access to a departmental Windows NT network, while another policy might give root privileges on corporate Unix systems to senior system managers in the IT department.

When users log on, the SSO determines what policies apply to that particular user ID. After that, the SSO vouches for the user to other systems.

For example, a programmer would be given access that's appropriate for his position, department and current projects. If an attribute changes — say, the programmer receives a lateral transfer — only the SSO system needs to be updated. The next time he logs on, he's automatically locked out of his old department's systems and given access to his new department's systems.

Ensuring Secure Log-ons

Because SSO involves granting a lot of access rights, it's important that the single authentication process is secure. One way to ensure this is to forgo static user ID/password pairs in favor of digital "tokens," such as the SecurID card from Bedford, Mass.-based RSA Security Inc. These tokens create different single-use passwords for every log-on that are transmitted securely across networks. This makes it virtually impossible for attackers to sniff usable passwords. Token-based authentication also prevents attempts to bypass the SSO and log directly on to secondary systems.

Password/user ID pairs are also encrypted (often with Kerberos [QuickStudy, July 3]) to prevent sniffing attacks. SSOs can also support two- or three-factor authentication, combining passwords with tokens or even with biometric authentication tools.

Centralizing authentication and authorization also simplifies cleanup when an employee is terminated. Instead of tracking down all the systems and resources to which an employee might have had access, managers can simply remove the employee's SSO account.

On the downside, an SSO can represent an attractive nuisance as well as a single point of failure for network security. It may also take a lot of work to establish access to all network resources in an organization, but for many in IT, the benefits are worth it.

Loshin is a freelance writer in Arlington, Mass.

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Helping Web Sites Take Phone Calls

NetByTel gives online shoppers voice access to e-commerce sites

BY AMY HELEN JOHNSON

Call it e-commerce without the browser. Shoppers who want to buy office supplies from Office Depot Inc.'s Web site can simply dial a toll-free number and place orders using an interactive voice-response system that does the browsing for them.

Office Depot's application, built and hosted by NetByTel Inc. in Boca Raton, Fla., uses voice synthesis and recognition technologies to let shoppers find and purchase goods from the retailer's online catalog.

Ken Jackowitz, Office Depot's vice president of business systems, says NetByTel's technology, which understands and interprets natural language phrases, offers a user-friendly alternative to interactive voice response — the typical "press 1 for . . ." telephone application.

With the NetByTel system, customers provide the necessary information by responding verbally to prompts instead of punching buttons. If NetByTel needs information from Office Depot — a product description, for example — it retrieves it by initiating an XML-based client session with the Office Depot Web site in Delray Beach, Fla. Jackowitz says no burden was placed on his IT team because the system leveraged Office Depot's existing infrastructure to provide the data interface, and NetByTel developed and hosted the application.

Call Savings

The new system, in place since October, accounts for 5% of all of Office Depot's retail catalog orders, Jackowitz says. Orders handled by NetByTel cost 88% less to process than orders placed through a human operator, he estimates, and orders that come through the system average more items than the average six items per order placed through human operators.

Because NetByTel develops and hosts the applications for each customer and charges a flat per-transaction fee, Office Depot's up-front cost for voice-recognitioo technology was low. That pay-as-you-go business model, says Jackie Fenn, an analyst at Stamford, Conn.-based Gartner Group Inc., means that NetByTel has a solid financial proposition for most of its customers.

Fenn also credits NetByTel with building its applications on top of existing voice-recognition technologies from companies like SpeechWorks International Inc. in Boston. In this way, NetByTel can focus on building customized voice-enabled applications that tie into the vendor's e-commerce system.

But NetByTel's approach may not make sense for companies where speech recognition is a key component of the business model, Fenn says. Companies that want to build multiple voice-based applications may find it more economical in the long run to buy the necessary technology and train internal people to use it. A large organization, like Fidelity Investments, which has extensive voice-based customer self-service applications, wouldn't be a good customer, she says.

However, NetByTel's CEO and co-founder, Neal Bernstein, says he doesn't see many companies taking the applications in-house. The secret to a successful voice-based application, he says, isn't just the technology, but also the human factors, such as knowing when and how long to pause for responses, how to differentiate among ambiguous answers and how to design a script so that customers feel comfortable with the system.

Toward Better Speech

Bernstein says the firm's immediate plans are to improve the naturalness of the product's speaking voice. Long-term goals include improving the software's understanding of natural-language commands.

NetByTel also plans to expand the types of applications it builds, says Bernstein. Right now, the vendor focuses oo voice-recognitioo ordering systems for Web-based e-commerce sites. But NetByTel could also support applications like expense reporting and delivery-status updates, he says.

There's already an example of such an applicatioo at Office Depot. NetByTel's order entry application was so successful, says Jackowitz, that Office Depot commissioned a voice-based system for the company's delivery drivers to report problems. As a result, more up-to-date information has been available to service representatives who handle order-status inquiries, he says.

Johnson is a Computerworld contributing writer in Seattle.

NETBYTEL CO-FOUNDERS Neal Bernstein (left) and Paul Robinson plan to expand beyond e-commerce applications.

NetByTel Inc.

Location: 1141 South Rogers Circle, Boca Raton, Fla. 33487

Telephone: (800) 638-2983

Web: *www.netbytel.com*

The technology: Develops and hosts voice-enabled e-commerce applications

Why it's worth watching: Adds a phone-based sales channel to e-commerce Web sites

Company officers:
- Neal Bernstein, co-founder and CEO
- Paul Robinson, co-founder, president and chief operating officer

Milestones:
- June 1999: Company founded
- April 2000: Services launched

Employees/growth rate: 40; 200% per year

Profitability date: mid-2002

Burn money: $10 million from Chelsea Capital Partners LLC, Mesco Ltd. and T-Ventures

Services/pricing: Revenue Generation Suite and Customer Relationship Management Suite; each is priced at 50 cents to $1.25 per transaction.

Customers: Office Depot, 1-800-Flowers.com Inc., Flooz.com Inc., Priceline.com Inc., BigStar Entertainment Inc., Ashford.com Inc., Greenfield Online Inc.

Partners: Dialogic Corp., SpeechWorks International Inc. and SCA Promotions Inc.

Red flags for IT:
- Companies that require many voice recognition applications may want to develop their own systems in-house.
- Low barriers to entry mean other vendors could quickly jump in as the market takes off.

COMPUTERWORLD emerging companies

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NetByTel Ahead Of the Curve

The emerging market for voice-recognition applications has yet to prove itself, says Gartner Group analyst Jackie Fenn. But vendors like NetByTel have found a few early customers. The financial services and travel industries, Fenn says, are ideal because companies in these markets have demonstrated success in handling transactions over the phone. Dot-coms also might see voice-recognition as a revenue opportunity because these applications let firms provide access to people who don't have Web browsers, without the heavy investment of building a call center, she says.

NetByTel is in a good position to lead the market, says Fenn, not only because of its technology, but also because of its position as one of the earliest entrants to offer a voice-recognition sales application. But the start-up could face competition from voice portals like Tellme Networks Inc. in Mountain View, Calif., and BeVocal Inc. in Sunnyvale, Calif. Although these vendors are best known for providing prepackaged information over the phone – like stock quotes and weather reports – they also promote their services to business customers who wish to build custom, private-label, voice-driven applications.

NetByTel's closest competitors include the following companies:

Interactive Telesis Inc.

San Diego

www.interactivetelesis.com

Interactive Telesis builds and hosts voice-recognition applications, but unlike NetByTel, it doesn't focus specifically on Web-based e-commerce applications. Its customer list includes university records offices and accounting firms. The types of applications it builds range from voice-mail access to interactive voice response programs, in which users punch buttons on touch-tone phones to input commands.

Voci Corp.

Campbell, Calif.

www.vocicorp.com

Voci teamed up with Menlo Park, Calif.-based Nuance Communications Inc. last August to add access to Internet content and e-commerce to its voice-recognition applications. Like NetByTel, Voci hosts the applications on its own speech platform. However, Voci has been marketing itself strongly as an alternative to call centers.

– *Amy Helen Johnson*

The CIO's Career Agent

There are relatively few career agents for CIOs, but this new field may grow now that so many IT executives are abandoning dot-coms. As they do, career agent Phil Schneidermeyer has some advice for the CIO job seeker. By Zachary Tobias

▸**Name:** Phil Schneidermeyer, chief talent scout

▸**Company:** Talent Intelligence Agency (TIA) in Darien, Conn.

▸**Nature of the work:** Schneidermeyer develops long-term relationships with technology executives, keeping them apprised of new job opportunities in their fields and representing them to future employers.

▸**Previous experience:** Before starting TIA, Schneidermeyer was managing director at Korn/Ferry International, where he served as technology officers practice leader. Earlier in his career, Schneidermeyer held management positions at a number of manufacturing firms and as a vice president at an economics consulting firm.

▸**Advice:** Schneidermeyer says that IT professionals should think long term when planning their careers. Although demand is high, a successful job search can still take years. IT professionals should always keep abreast of goings-on in the market by listening to what recruiters are offering, even if they are happy in their current positions.

IT'S NO SECRET THAT IT professionals are some of the most in-demand workers in the world.

But that doesn't mean that finding the right job is easy, especially for those shooting for top-level executive positions at the largest and most prestigious companies.

That's particularly true today, with the recent downturn in the economy making competition in the IT job market stiffer than its been in years, according to veteran recruiter and career ageot Phil Schneidermeyer.

Schneidermeyer should know. As a recruiter at Los Angeles-based search firm Korn/Ferry International during most of the 1990s, he placed scores of IT professionals in new positions and quickly rose to the top of his field. Last summer, he struck out on his own, launching Darien, Conn.-based Talent Intelligence Agency LLC, a company based on a new model for matching top IT professionals with companies desperate for their skills.

Playing a role he compares to that of a sports or entertainment agent, Schneidermeyer develops long-term relationships with his IT executive clients, giving them career advice, apprising them of new job opportunities and coaching them through the hiring process and salary negotiations.

Unlike career agents in other fields, though, Schneidermeyer doesn't charge his clients a fee; like a traditional recruiter, he has the hiring company foot the bill when a successful match is made.

With his long list of contacts and deep knowledge of the IT job world, Schneidermeyer is well qualified to give advice, and even some of the most experienced IT professionals can use it now.

As many Internet companies have folded in receot months, many IT executives who had left their jobs to work at start-ups are trying to re-enter the corporate world, explains Schneidermeyer. This is filling the market with a new wave of candidates and making competition for top IT posts tough, especially since many companies are reluctant to make big hiring investments at a time when their financial futures seem increasingly less certain.

So what kind of advice is Schneidermeyer giving IT managers and executives looking for jobs in a tightening market? The following are some key points:

Be Patient

"Understand that it takes time," says Schneidermeyer. "There aren't that many senior CIO-level positions out there to begin with, so you can't expect the phone to be ringing every day."

Schneidermeyer says that most job searches take three to six months. If you're out of work, some consulting work can bring in extra income, keep your skills sharp and let potential employers know you're still in the game.

Be Realistic

The No. 1 limitation on career growth for top-level CIOs, chief technical officers and vice presidents of IT is geography, since there are only so many Fortune 1,000 firms within a given metropolitan area. If you're not prepared to relocate, find out what openings there are at those companies near you. If there are none at the top level, be prepared to take one lower down.

Also, realize just how stiff the competition can be. People from all over the world apply for many top-level positions. Too many job-seekers think they are a shoo-in because they meet the requirements for the job, when in fact there are plenty of candidates who surpass them, Schneidermeyer says.

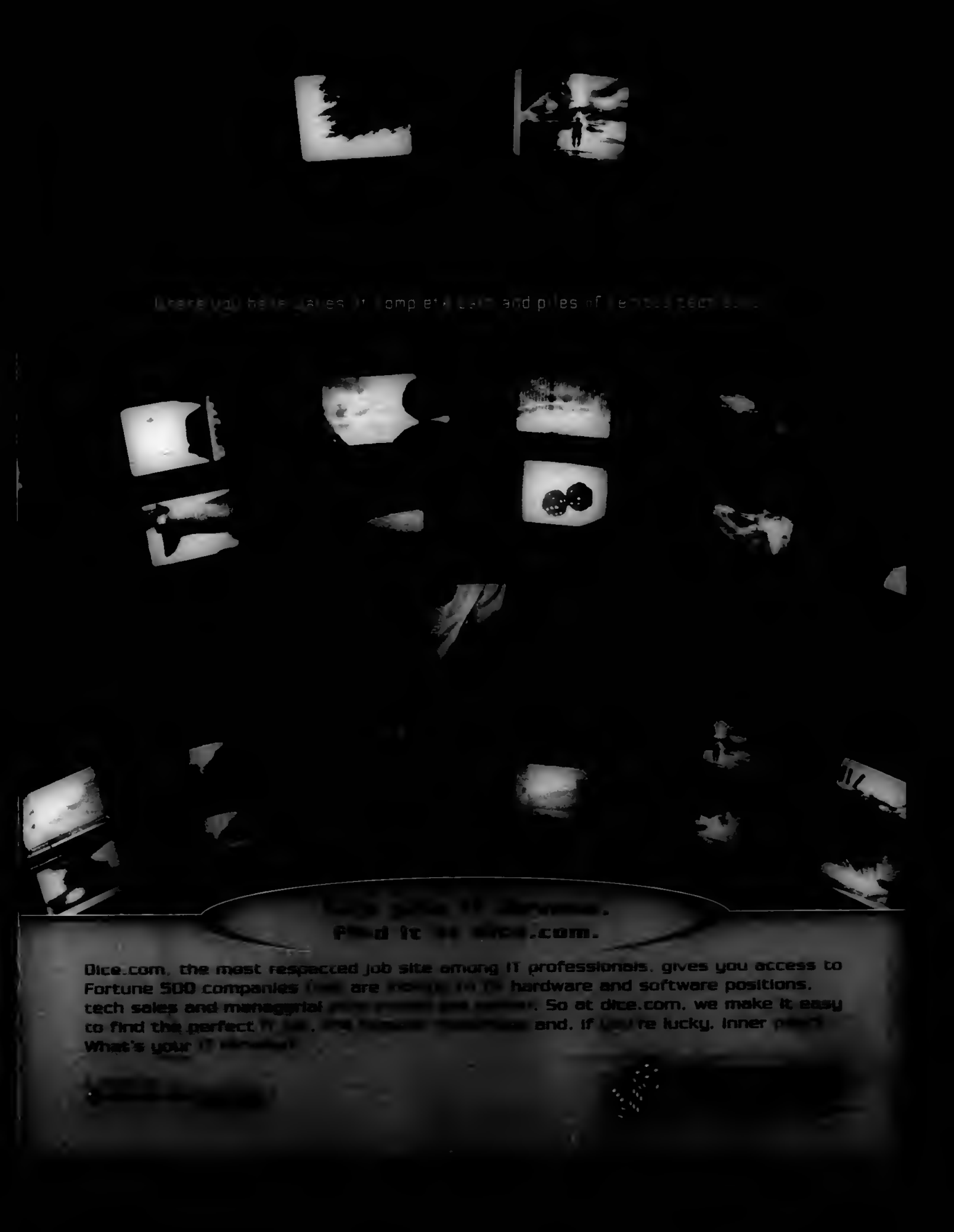
"The question is how do you measure up to the other candidates," be points out, "not how do you measure up to the position specification."

Stay Aware

If there's one thing Schneidermeyer stresses to clieots it's the importance of looking ahead. Even IT executives in stable positions should always keep an eye on the job market, no matter how happy they are with their current roles.

"When you need a job, that's the wrong time to start looking," he says. If recruiters call, find out what they're offering, even if you don't have a job change in mind. Then you'll know if you're over- or underpaid and get a sense of what skills are most in demand. ◗

Tobias is a freelance writer in Santa Cruz, Calif.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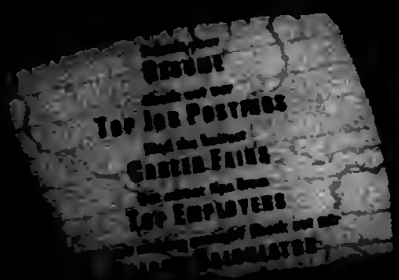

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Talent is the fuel of the new economy.

IT Careers in the East

From once remote islands in Maine to the southern Atlantic coast, the eastern seaboard stretches wide with opportunities for information technology professionals. Some of the nation's stalwart research facilities and businesses can be found here, with most all of them relying on or developing technology for the 21st century.

There's Lab Land, Silicon Alley and heavy, heavy demand throughout the area for the IT knowledge and vision needed to forge entirely new businesses and markets.

Lucent Technologies
Warren, NJ/Murray Hill, NJ

The core of research and development for Lucent Technologies can be found in the hills of New Jersey. "There was a time when R&D focused on selling a box to our customers," explains Devon Prutzman, Lucent manager of recruitment marketing. "Today, we provide the applications and software that go with that box."

As one of the leaders in the newly converged communications industry, Lucent needs IT employees in wireless, software development, optical components, data networking and professional services. "We're hiring engineers, software programmers and scientists," says Prutzmon. "We look for people who have a mix of technical and business skills."

Those skills translate into being able to listen, to assess customer needs, and to develop a technical solution. "We also look for a diversity of skills and backgrounds. That's what makes R&D function best – people who approach situations and issues from different views and angles," she says.

"We hire smart people to get a job done," she adds. "You'll work with your team and also reach out to work with other Lucent teams for some of the best in technical challenges. This really is a one-of-a-kind place – the breadth and depth of our portfolio is far and away better than any other in the industry," says Prutzman. "We don't buy solutions or enhance them – we create them. If you want to be part of building the next generation Internet, you'll want to be here."

Pitney Bowes, Inc.
Stamford, CT

Transformation is the word that comes up most often when talking about Pitney Bowes' business and its IT organization. Today the company is at the forefront of providing technology-based solutions to businesses for their mailing, messaging, shipping and document management needs.

Greg Buoncontri, vice president and chief information officer, says the company offers interesting, intriguing projects for IT professionals. These include implementation of SAP enterprise systems, development of a new order-to-cash system and a new lease management system. "We have a lot of e-business activities under way," Buoncontri explains. These include building on Xtranet for larger customers and new products based on Pitney Bowes' software platforms and internal IT infrastructures. "We're also working on next-generation products – our postage meters, messaging suites, inbound/outbound shipping management solutions, and a complete conversion of our internal IT infrastructure to Microsoft Windows 2000, new Dell computers and Cisco networking technology."

Buoncontri has positions available in management and technical staffing. "We need SAP, Oracle, network engineers and technicians, Lotus Notes, and people with Broadvision and e-business platform development," he says. "Technical competence is just the first hurdle. We also look for results orientation, a customer-centric attitude and comfort with ambiguity."

Pitney Bowes' IT organization changed recently from a decentralized to centralized model with the new group known internally as TechCentral. The group supports the company's businesses, on a global basis: Mailing Systems, Document Messaging Technologies, Pitney Bowes Management Services and Pitney Bowes Financial Services and the corporate staff. In addition to learning through projects for the businesses, TechCentral employees are required to enroll in training to go deeper in their field or broader to something entirely new, as well as learning that will help with personal effectiveness skills.

"We're making a tremendous investment in upgrading our technology. The mix of new people, growth, new technology and new organization make for a pretty exciting and interesting mix," says Buoncontri.

The Vanguard Group
Philadelphia, PA

While IT careers abound in many geographic areas, the Philadelphia area offers a hub of IT service companies, pharmaceutical companies and financial services firms. "It makes for heavy demand and a lot of opportunity," says John Marcante, principal in charge of institutional IT for the Vanguard Group. "We have great colleges we can partner with and recruit from, which makes this area even stronger as an IT community."

Part of Marcante's mission is to recruit the best and brightest for Vanguard, an investment management company that was listed among the "Top 100 Companies that Best Leverage IT" by *CIO Magazine*. "To put it simply, our purpose is to create wealth for individuals and institutions. Today technology plays a huge role in financial services, especially in investment management. Our clients have varying financial needs, are sophisticated and are technologically savvy."

Vanguard's leaders believe the Internet enables shareholders to do what they need to do when and where they need to do it. As the only shareholder-owned investment management company in the country, this is critical to Vanguard's operation and streamlines the decision-making process. "We put our shareholders' needs first, so in 1995 we elevated our web capability in real-time mode," says Marcante. "At that time, our web site was centered around self-servicing, educating and empowering investors. While we still offer those valuable resources, today Vanguard.com brings together the power and knowledge of our crew to our shareholders."

Most recently, Vanguard initiated collaborative browsing and shared web sessions that allow Vanguard crewmembers to share web sessions with shareholders during complex transactions.

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Julie Cunningham, Manager, Global College Relations, Tellabs, Inc. Julie is a former board member of the National Association of Colleges and Employers. She speaks frequently on the programs and practices that have made Tellabs one of the premier benchmarks for college hiring.

Diversity - What You Need to Do to Tap "All" the Top Talent

PRESTON EDWARDS, IMDIVERSITY.COM

Top employers benchmark how diversity has become a core value to attracting and retaining top talent and keeping a competitive edge. Moderator, Preston Edwards, Chairman and CEO, IMDiversity.com, and Black Collegian Magazine, is nationally known for his 30 year commitment to diversity education. He has been honored by numerous organizations including the 1999 Pericles Award from the Employment Management Association.

What You Really Need to Know About Resume Management Systems or, How to Tell "Real Ware" from "Vaporware"

MARK MEHLER, MMC GROUP

The worlds most competitive corporations discuss the pros and cons of choosing and using emerging technology tools and systems. Moderator: Mark Mehler, President, MMC Group. Mark is an international consultant on high-volume staffing processes, a sought after speaker at national recruiting conferences and co-author of *CareerXroads*.

Town Hall Forum: Pundits, Puns and Pulled Punches

GERRY CRISPIN, CAREERXROADS 2000; JOHN SULLIVAN, AGILENT TECHNOLOGIES; KEVIN WHEELER, GLOBAL LEARNING RESOURCES; PETER WEDDLE, WEDDLE'S

Four internet recruiting pundits square off in a "no-holds" barred debate on the future of employment. Who are the winners and losers in the employment space?

Internet Recruiting Strategies - TOOLS Overview:

BRET HOLLANDER, NETRECRUITER

Advanced sourcing strategies & techniques demonstrated from an actual day of recruiting by one of the best firms in the U.S. on sourcing any type of candidate. Witness actual software, as well as unique scripts and techniques to successfully develop relationships with potential candidates. TOOLS is intended for recruiters or sourcing specialists who have already mastered basic sourcing techniques through the use of fee-based sites, formula searching on engines such as AltaVista or Google, and have taken an existing all-day class on this topic by any of the top Internet recruiting training firms.

- Capture Tools
- Processing Tools
- Communication Tools
- Security Tools
- Learning Tools

Technology 2001

SUSAN HODGES, SEMCO

There is always something new going on in IT, but the new millennium seems even busier than usual. The Internet is affecting everything that's being done and new products and skills appear daily. This session will look at the new technology in each critical area - platforms, development, data, communications and applications.

Presented by

IDG Recruitment Solutions

Internet specialty food/grocery business in LIC, New York seeking to fill the following positions:

Chief Information Officer: Must have M.S. degree in a science or business field and two years experience in project management or related. Knowledge of SAP implementation and enterprise resource systems required.

Director of Logistics and Information Systems: Must have M.S. degree in a science or business field and two years of experience in project management or related. Knowledge of SAP implementation and enterprise resource systems required.

Project Coordinator of Enterprise Systems: Must have M.S. degree in a science or business field and one year of experience in project management or related. Knowledge of SAP implementation and enterprise resource systems required.

Send responses to: HR Department (Attn: MD) Fresh Direct, Inc., 23-30 Borden Avenue, Long Island City, NY 11101

CTO/CIO

TravelLeaders Group, the fastest growing travel services company in the U.S. is seeking an energetic, strategic thinker to direct our IT function on an enterprise-wide basis. Located in Carol Gables, FL this will be responsible for IT systems infrastructure and applications as well as telecommunications. This person will have the ability to move fluidly between technical and business initiatives (including e-commerce) while helping to rapidly consolidate and improve our technology infrastructure. A BS in computer science or a related field is required (advanced degree preferred) along with 10+ yrs progressive experience with at least 5 yrs in management of technical staff. Previous travel industry experience with multiple CRS vendors is strongly preferred as are strong project management skills. Interested candidates are invited to visit our web-site www.travelleaders.com for more information on our company. Qualified candidates should forward their credentials to humanresources@travelleaders.com EOE/m/f/d/v

SOFTWARE ENGINEER to provide on-site consultancy in complete life cycle design and development of financial applications from concept to configuration; design of multi-tier client/server applications using PowerBuilder, PowerDesigner, Java on Windows 95/NT platforms; database tools using Oracle and MS SQL; object oriented methodologies using C/C++, and stored procedures development using COBOL, FoxPro, Delphi, Java and various other object oriented concepts. Require: Master (or equivalent) in Information Systems/Business Administration/Computer Science and three years experience in the job offered or any experience providing skills in described duties. Bachelor (or equivalent) and five years experience may be substituted for Master (or equivalent) and three years experience. 40% travel required to customer locations within the United States. Salary: $65,000 per year. 8:30 am to 5:30 pm, M-F. Apply with resume to President, Softscape America, Inc., 3308 Peachtree Industrial Blvd., Suite 120, Duluth, GA 30096.

Software Engineers (start at $70k/Yr.) & Programmers (start at $66K/Yr.) needed in A, B, C, D, E, or F (A) Java, JBoss 2.0, HS WebServer Java WebServer 2.0, Jbuilder 3.0, Solaris Javascript (B) PROLOG, Pro*C Web Requestions, HP UX, Oracle Financials 10.7, Winrs, Oracle Web Apps. (C) Java, XML, Websphere, BEA Weblogic Application Server Netegrity SiteMinder, Apache Web Server CDMA, TDMA. (D) Unix, IDMS/R, Java, Vbscript Javascript ADSO Adsalve, Panvalet, DBOL, OLQ, DMLO Groupwise (E) UML, Visual Basic, Uniface (4 GL), ASP 92.0, VD Script, J Script JDK, Visual Interdev 6.0, S-Designer PFC, (F) WINIX, HP 9000, HP UX, Oracle Financial 10.7 Pro*C, Oracle Project Accounting, Oracle Self Service Web (G) Visual Basic, MS SI OL Server, API, DBA Skills, SQL, Cold Fusion Sybase, MS Access, Windows NT, Unix. BS/BA in Science/Engg or Business Admin. and 2 yrs exp in job offered required for Programmer positions. For Software Engineer positions, MS/MA in Science/Engg or Business Admin with 2 yrs exp or BS /BA in Science/Engg/Business Admin with 5 years progressive exp. in job offered required. Send resume to HR, Codesoft International Inc. 8725 Dunwoody Place, Suite 6, Atlanta, GA 30350. Phone: (770) 913-0101, Fax: (770) 913-0611, e-mail resume@codesoft-intl.com. Call for more details.

Banking

MBNA Hallmark Information Services, a subsidiary of MBNA, the world's largest independent credit card lender, is accepting applications for several **lead software engineering** positions.

You will be responsible for highly complex technical analysis, designing, coding, and testing of distributed application systems software leading projects that are intricate and diverse in nature; and making recommendations to resolve complex technical issues. You will also provide support for production applications, to include problem analysis, resolution, and prevention and coordinate and work with external vendors as well as many internal software development groups.

Required qualifications include, but are not limited to, five to seven years of testing experience and a four year college degree or equivalent technical education; experience with Microsoft C++, Visual Basic, Powerbuilder, or related development applications and tools; and proven, demonstrable knowledge of Unix and NT operating systems and application development software.

Please forward your resume and a cover letter referencing code no. NA991036 to Ms. Shawn Alexander, MBNA Hallmark Information Services, 1100 N. King Street, Wilmington, DE 19884-2232

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SENIOR PROGRAMMER/ANALYST (Columbia, SC) to perform system analysis and design, develop, program, intergrate and support computer software for agricultural bank loan applications using Object Oriented Analysis & Design, Multi-Tiered Architecture, Data Modeling, Visual Basic, SQL, Stored Procedures, MTS and SQL Server 7 on Windows 98/NT. Require Baccalaureate degree (or foreign equivalent) in any discipline with at least 19 semester hours or 30 quarter hours (or foreign equivalent) of academic credit in Computer Science or a closely related field with 3 years of experience in the position offered or as a Programmer/Analyst. Experience must include 3 years using VB6 and OOA&D. Salary: $52,000 per year. 8:00 am to 5:00 pm, M-F. Send resume to Recruiter, AgFirst Farm Credit Bank, PO Box 1499, Columbia, SC 29202. Attn: Job CM

Sr Software Developer (Littleton, MA) -Research, design, develop, implement and test computer software in a client/server environment, utilizing OOA, OOD and Forte Tool. Translate application requirements and use cases into problem-domain object oriented work products, identify objects. Develop analysis work products, including scenario/sequence diagrams. Translate, transform and implement design work products into source code. Provide technical support to junior team members as required. Must have Bachelor's Degree in Computer Science, Engineering or Related Field or equivalent and 5 yrs experience in a job offered or 5 yrs progressive experience as a Software Developer Experience may have been obtained concurrently and must include 3 yrs experience using OOA and OOD in client/server environment and 1 yr experience using Forte Tools. Must have legal authority to work in the U.S. Send resume to Attn: N. Page, SI Corporation, REF: SDV-MA, 3390 Peachtree Road, Ste 1700, Atlanta, GA 30326

Software Engineer Analyze user reqmts & dsgn systems as per user specs on Digital Alpha & Pentium hware platforms in Digital Unix, Win NT/95 O/S envmt. Dvlp system applics utilizing Sybase as backend & APT as front-end. Utilize T-SQL to write queries, stored procedures, triggers, tables, indexes, rules & defaults. Write data conversion scripts & stored procedures to transfer old system's data from legacy system to new system on Sybase. Write data transfer Scripts for distributed depts utilizing combination of UNIX Shell Scripts & stored procedures. Utilize SQR, Ob-LibraryC to generate reports. Write system code in C & C++. Write user manuals documenting system & train end users. Write DBA scripts to create dbase, take dbase backups, DBCC scripts. Fine-tune stored procedures & create logins. Req: Masters in Comp Sci or Comp Engg or Business or equiv + 2yrs exp in job offd. $70K/yr. 8a-5p, 40hr/wk. Submit resume or C.V. to Philadelphia Job Bank, 444 N. 3rd St - 3rd Fl, Philadelphia, PA 19123 indicating JO# 9118011

Technical Support Specialist for property/casualty insurance services Co. in Riverview, FL to provide technical computer system support for info data processing systems & server support for LAN/WAN. Dvlp work goals & coord work on converting hware and/or sware w/in time & cost constraints. Review, modify, test & correct computer pgms for compatibility & to assure programs meet objectives. Evaluate computer system for work load & capacity & make recommendations for improvements. Ensure quality & functionality of system. Lead support team in troubleshooting & problem resolution. Technologies used incl Lotus Notes & Lotus SmartSuite, SQL. Win NT & Win 95/98 w/ TCP/IP protocol. Bach deg in Comp Sci/Engg/Math or equiv & 2yrs in-job exp or 2 yrs related-job exp that includes technical PC & server support system troubleshooting & problem resolution for Lotus Notes, SQL & Win NT. 40hrs/wk, M-F, 8am-6pm. $61,277/yr. Send resume to Workforce Program Support/ A.L.C. Unit, PO Box 10869, Tallahassee, FL 32302-0869.

IT PROFESSIONALS NEEDED

Programmer Analysts · Systems Analysts · Systems Engineers · Software Development

Digital Equipment (India) Ltd is a leading software company with offices nationwide. With Digital you will get: Extensive Benefits, Additional Compensation for referrals, and Professional Challenges with training and assignments to keep you at the leading edge of technology. We need people with the following skills:

OS: Open VMS, NT/Windows 2000, Tru 64Unix.

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Middleware: MSMQ, TUXEDO

Database: Oracle, SQL Server, Sybase and Rdb

Applications can be sent to: North America F & A Manager, Digital Equipment (India) Ltd., 334 South Street, SHR 3-2/C6, Shrewsbury, Massachusetts 01545.

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Senior Vice President, Emerging Technologies, Catharon Productions, Inc. - Primary responsibility for the creation, delivery and management of revolutionary software systems, created on a newly developed computer language, and for the hands-on management and daily direction of all related resources. Responsible for the creation, delivery and management of credit/charge card authorization, acceptance, payment advice and reconciliation systems. Acts as the first and primary point-of-contact on Catharon's technologies and products. Implements and enforces essential "best practice" systems and processes to achieve successful multi-project management. Develops & systems development project life cycle template. Functions as an active member of the Executive Team in managing overall business strategy and company direction, with an emphasis on technologies, products, software development and credit/charge card payment systems expertise. For company details visit our website at www.Catharon.com. Master's Degree in Information Sciences or equivalent and 2 years of experience required. Respond via email to: Human-Resources@Catharon.com or fax 519-382-6444 Attn: Human Resources.

Systems Opportunities

With $5 billion in revenue and more than 500,000 clients, **ADP** is the world's largest independent computer services firm. As the proven leader in providing solutions to corporate America, we've experienced a phenomenal and unprecedented 39 consecutive years of double-digit growth. We have current opportunities at our offices in **Ann Arbor, MI.**

Associate / Application Consultant

Analyze and define client requirements for customizations. Develop functional specifications following CSS Horizon standards. Analyze computer systems and work with clients to contain the scope of the project within the bounds of the CSS Horizon Alliance product. Design, code and implement enhancements according to requirements and perform other duties as required.

Bachelor's degree in Computer Science, MIS, Engineering or Computer information systems and a minimum of 6 months experience in the above job or 6 months as a Computer Systems Analyst. Experience with one or more of the following languages required: C, C++, COBOL, SQR, and SQL. **(Code AAC)**

Database Engineer

Perform configuration and installation of ORACLE v7.3.4 & 8.0.5. Create and modify primary database storage structures. Perform recovery, monitoring, trouble-shooting, backups, performance tuning and patch applications. Establish physical databases, code database descriptions and specify identifiers of database management system and perform other database support functions. SQL server exp. knowledge of EMC storage devices and supporting a 24x7 environment a plus.

Master's in Comp. Science, MIS, Engineering, Mathematics or Science and a minimum of 6 mos. in the above job. **(Code DE)**

Over 156 quarters of consecutive record growth enables us to provide highly competitive compensation and benefits, comprehensive training and on-going advancement opportunities. Please forward your resume and salary expectations to **ADP, Inc., Attn: A. Hanson - (insert appropriate code), Fax: (770) 777-6004, E-mail: andy_hanson@nas.adp.com.** ADP believes that diversity leads to strength. We are an Affirmative Action/Equal Opportunity Employer M/F/D/V.

ADP National Account Services

Outsourcing for HR Benefits and Payroll

Senior Oracle Developer

Systems Applications Int'l Corp (SAIC), an employee-owned Co., provides hi-tech svcs & products to gov't & commercial customers. SAIC & its subsidiaries have estimated annual revenues of nearly $5.5 billion & more than 40,000 employees at offices in over 150 cities worldwide.

We are seeking experienced Oracle Dvlprs to fill 5+ positions in Cleveland, OH. BS/MS in Comp Sci or related field req'd. Skill set to incl Oracle, PL/SQL, VB & Unix. Send resume to HR Recruiter, 1001 Lakeshore Ave., Ste 1000, Cleveland, OH 44114 or online at melanie.morrow@saic.com

SAIC offers excellent compensation, career growth & outstanding benefits, incl stock purchase prgm & retirement plan. SAIC is an Affirmative Action Employer. We value cultural diversity in the workplace.

Business Information Specialist (Chicago, IL). Provide technical assistance to internal employees who are selling company products, assist them with trouble shooting of problems associated with their computer systems, provide training and support field employees in PC and VAX applications and skills design test and tales with Software Development and Computer Operations in the development and implementation of new or modified screens or complex reports for use by field employees research and respond to field employee questions/problems with reports and applications, maintain all notes, files, databases associated with the duties of position, perform other administrative functions as designated by immediate supervisor. Bachelor's degree in computer information systems, and management, two years of experience. Able to apply IBM and Macintosh compatible software and work with MS Word, Excel, Power Point, Programming in CUA2 and knowledge of VAX System, Procomm Plus, Reflection and Powerplay database system. M-F, 40 hrs/wk, $32,500/yr. Applicant must show proof of legal authority to work in the U.S. Send resume to Illinois Dept. of Employment Security, 401 South State St., 7 North, Chicago, IL 60605, attn: Brenda Kelly, Re: 9-V-IL 24174-K. An Employer Paid Ad. No calls-send 2 copies of both resume and cover letter.

Multiple Positions: Senior Software Consultant (Software Engineer). **Qualifications:** Must have at least a BS or its equivalent in Computer Science, Accounting/Economics, Math or related field. Must have documented proof of 2 years experience as a Senior Software Consultant (Software Engineer). If qualifying on the basis of experience only, must have2 years experience performing analysis, development, installation, implementation, conversion and modification of JD Edwards. Must have proof of legal authority to work in the U.S. **Duties:** Analysis, development, installation, implementation, conversion and modification of JD Edwards, an enterprise resource planning business application. All development is done in Report Program Generator (RPG) language which runs on AS/400. Utilize One World Configurable Network Computing (CNC) systems management and One World Advanced Development Tools, as well as AS/400 System Administration and Management, to formulate or define system scope and objectives, write detailed description of user needs, identify program functions and steps required to develop or refer programs to client's needs, perform system integration and configuration, create program specification, and code, test and execute unit integration. Interact with users of the software produced. Provide training and support in the installation, implementation and use of new systems, enhancements and modifications and provide solutions for various software problems caused by incompatibility of various systems. **Area of Employment:** Various unanticipated locations around the U.S. **Salary:** $110,000/yr. 40 hrs/wk. **Contact:** Send resume to Jim Shimada, Colorado Department of Labor and Employment, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117; refer to Order Number CO4685080.

SDI Technologies is a dynamic E business Systems Integrator based out of Pittsburgh, PA. With a global presence in over 4 continents, SDI is looking to expand rapidly its local presence in the following areas:

Web Developer/Programmer: requires a Masters or CIS or 5 years of work experience; ability to develop web based applications for Fortune clients using knowledge of Visual Basic, Active server pages and Java. Candidates will also need to know SQL, Oracle / VBScript, Java Script and SQL Server Certification will be a plus. The candidates will require to travel and relocate to the client site for projects. Salary $55K to $65K.

Administrators/Architect: requires a Masters or CIS or 5 years of work experience; ability to develop and design application architectures for Fortune 500 clients using knowledge of databases like Oracle, SQL and Sybase. Working knowledge and experience of Unix, TCP/IP, Windows NT and Database administration is a must. Candidates will also need to know SQL, Microsoft Exchange, Windows 2000, Firewalls and Networking. The candidates will require to travel and relocate to the client site for projects. Salary $60K.

Please mail or fax your resume with reference code "CW2365" to SDI TECHNOLOGIES, Attn: Human Resources, Penn Center West One, Suite 311, Pittsburgh, PA 15276 or email them to careers@sdiworld.com.

Sr. software engineer with 5+years experience in C++ and Visual basic programming required for full time position in Marina del Rey. Fax resume to Suzanne at 310 823-6714.

A shipping & distribution services company, located in Lafayette, Indiana, needs a Database Developer. Requires a bachelor's degree or equivalent with a major in computer science or related engineering discipline plus 2 years experience as a Database Developer/Administrator/Manager. Technical Analyst or 2 years experience in any occupation involving design and development of database. Send resumes: Manager, Human Resources, QuikPak, Inc., 3532 Coleman Court, P.O. Box 5665, Lafayette, IN 47903.

Software Engineer sought by software consulting company in Englewood, CO to work in Englewood & other unanticipated job sites in the U.S. to design, develop, implement & maintain ORACLE relational database management systems and related ORACLE software applications that incorporate client/server technology &/or are web based. Collect information & analyze requirements. Create designs & design documentation. Code, test & debug the ORACLE relational database management systems & ORACLE & related software applications. Implement & troubleshoot relational database management systems & applications. Create user documentation. Engage in user training. Maintain administer & support databases & applications & engage in database tuning. Engage in project management as required. Use ORACLE Forms, ORACLE Reports, Discover, SQL, PL/SQL, Pro*C, C, HTML, JAVA, Perl Scripting Language, Acusite & Clarify tool sets, etc. in the design & development process. Requires Bachelor's or foreign degree equivalent in Computer Science or related field (including Electronics) & 2 yrs. experience developing, implementing & maintaining ORACLE relational database management systems & related ORACLE software applications. Working knowledge of Discover, HTML & JAVA. $66,100/yr. M-F, 8am-5pm (2 openings). Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 & refer to Job Order No. JL1116931.

Programmer Analyst

NE OH insurance firm seeks experienced Programmer Analyst: Experience with VisualAge Smalltalk, Object Oriented Analysis & Design developing frameworks using patterns, XML knowledge to integrate XML in existing framework, DB2 experience developing of client/server applications, refactoring of Smalltalk applications. Requirements: B.S. in Electrical Engineering/Computer Science & at least 2 yrs. exp. Send resumes to IT Recruiting Code: SC81025, Progressive Casualty Insurance, 6300 Wilson Mills Rd., Box N722, Mayfield Village, OH 44143. Equal Opportunity Employer.

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Review customer business problems & lead projects or project phases dedicated to the computerized solution of problems; conduct system development & enhancement, design & analyze software systems using TAL, C, SCOBOL, ENSCRIBE, D45, Pathway & C++ programming languages for Tandem &NSK HIMALAYA operating systems.

Bachelor's degree in Computer Science or Engineering required. Three years of experience in the position or three years as a Project Leader/Manager and/or Programmer Analyst required. Experience in related occupation must include designing and analyzing software systems using TAL, C & SCOBOL programming languages for Tandem & NSK HIMALAYA operating systems.

40 hrs./week; 8:15am - 5:15pm; $67,000/year. Must have proof of legal authority to work in the U.S.

Send resumes to **ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605; Attention: Joeanne Breaux. Reference number V-IL 24914-N. AN EMPLOYER PAID AD. NO CALLS. PLEASE SEND 2 COPIES OF BOTH RESUME AND COVER LETTER.**

Service Automation Services Inc is seeking to fill the following positions in Houston, TX.

System Analysts with Masters in Computer Science or Engineering and minimum of one year of experience in developing software using Powerbuilder, MSVC 5.0, Sybase SQL and in networking using Windows NT and Microsoft platform. Experience in full function accounting and service industry is preferred.

Programmer/Analysts with Bachelors in Computer Science or Engineering and a minimum of one year of experience in developing software using Powerbuilder, MSVC 5.0, Sybase SQL and in networking using Windows NT and Microsoft platforms.

Prevailing wage will be paid. Fax resumes to: 713-466-3750 or e-mail to sas@sasintl.com

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Systems Analyst. 40hr/wk from 9a.m. to 5p.m. $70,000/yr. Analysis, design and development of commercial application system using relational databases INFORMIX SE 7.2, fourth generation language INFORMIX 4 GL 6.04 and structured query language under UNIX operating environment. Require Master degree in Computer Science or Applied Physics and one year experience in job offered. Applicants must show proof of legal authority to work in the U.S. Send resumes to Illinois Department of Employment Security, 401 South Jackson; Reference #V-IL 23520-J. An Employer Paid Ad. No Calls. Send 2 copies of both resume and cover letter.

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Design and develop ENOVIA'S Application Software ENOVIA is a leader in developing and implementing innovative Digital Enterprise Solutions. ENOVIA'S Cutting Edge solutions include WEB based Digital applications designed to help manufacturers create, manage, communicate and digitally simulate all aspects of the product life cycle

Requirements for various level positions include degrees in Computer Science, Engineering or a closely related field. Experience preferred in Java/C++, SQL, Windows NT and Unix.

ENOVIA offers a competitive salary and comprehensive benefits package ENOVIA is an equal opportunity employer Qualified applicants please forward your resume and salary requirements to: enovia1@enovia.com

SPL WorldGroup is an international builder of customer information systems for utility companies. We are currently looking for Individuals with DB2 Natural/Adabas SmallTalk, Java, Cobol and Javascript skills to work in our development centers in California, New Jersey and Chicago as

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Systems Analysts
Project Leaders
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San Francisco, CA 94105
Attn: Joe Barnett
Fax: 415-541-0224 EOE
E-mail:Joe_Barnett@splwg.com

Software Engineer 3 positions, 40 hrs/wk, 8am-5pm, $31.06/hr Duties: Design, implementation & maintenance of customized application software at various client sites throughout the U.S using Visual Basic, Power Builder, ORACLE, UNIX & AS/400. User documentation. Min Reqs: 3 yrs of college in the field of Computer Science & 6 mos in the job offered or 6 mos in software develop. using Visual Basic, PowerBuilder, ORACLE, UNIX & AS/400 & in user documentation. Willingness to relocate to various client sites within the U.S. for 1 to 3 year periods. Apply at the Texas Workforce Commission, Waxahachie, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. JOBTX11160549. Ad Paid by an Equal Opportunity Employer

Programmer Analyst design, develop, analyze and implement client server and mainframe based on software applications using software development tools in multiple environments and platforms. Demonstrated ability designing and developing software applications using Oracle and Developer 2000 (Forms and Reports). Demonstrated ability working with tools such as CICS, DB2, Cobol. Demonstrated ability working with Java, Java/Script, HTML. $65,000/yr. 40 hrs/wk. 9 a.m. - 5 p.m. Must have 2 yrs exp (or 2 yrs exp. in related occupation of Software Engineer) and B.S. in Comp. Sci. Engg., rel field/equivalent. Send 2 resumes. Case #20004012, Labor Exchange Office, 19 Stanford Street, 1st fl., Boston, MA 02114.

Senior Software Engineer (Broomfield, CO) Master's Degree in Engineering Computer Science, or Information Systems and one year of experience in the design, development and maintenance of applications utilizing programming in SQL and PL/SQL on Windows NT/UNIX operating systems and Oracle database design and administration. Employer considers a Bachelor's degree plus five years of progressive experience in the field as the equivalent of a Master's Degree. We offer highly competitive salaries and a comprehensive benefits program. For consideration forward your resume to: DoubleClick, Inc. Attn: Kerin Messiner, Human Resources, 450 West 33rd Street, New York, NY 10001

AN EQUAL OPPORTUNITY EMPLOYER

Business Process Analyst. Implement improvements to logistics, procurement, and other business processes using Supply Chain Management (SCM) principles and knowledge of automation of business processes through SAP ERP Systems and chemical products manufacturing operations. Requires Bachelor's in Bus. Admin/MIS or related and 5 yrs. exp. which must include implementation of business process improvements in the chemicals manufacturing industry including implementation of business process automation though an SAP ERP System. Interested candidates should respond to: Cognis Corporation, 5051 Estecreek Drive, Cincinnati, OH 45232 Attn: Tiffany King

Alpha Net Consulting, LLC delivers innovative IT solutions to business clients nationwide. We have immediate, full-time opportunities for Programmers, Engineering Programmers, Programmer Analysts, Systems Analysts, Software Engineers, DBA's, Consultants and Software Consultants in any of the following areas: Oracle Developer 2000, Reports 2.5, PL/SQL, SQL and/or SQL*Loader. Bachelor's or Master's degree required, depending on position. We also accept the foreign educational equivalent of the degree, or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to: Alpha Net Consulting, LLC, 2171 Jericho Turnpike, Suite LL2, Commack, NY 11725.

E-BUSINESS ARCHITECTS & Software Developers/Analysts. DigitalESP provides a full range of e-business services to companies, including e-business strategy, e-business and enterprise architecture design. We seek e-business Architects and e-business Software Developers/Analysts to develop B2B e-business solutions for our clients. We seek candidates with expertise in developing secure transactional systems including integration of divergent open standards and protocols into an integrated digital supply chain. Positions available in San Francisco, CA and New York, NY and at our headquarters in Raleigh, NC. E-mail credentials to Nancy Hill nancyh@digitalesp.com or fax to (919) 878-8895.

The Winthrop Corporation a financial services corporation based in Milford, CT has several senior and entry-level IT positions available.

We are presently considering applicants for:

- Software Engineers
- Programmer Analysts
- System Analysts
- Project Managers
- Application Developers

Must be willing to travel and relocate as required. Please forward resumes to: mlucci@wcl.com Human Resources, The Winthrop Corporation, Inc.

Software Engineer - Design, develop, unit test application programs. Integrate various technologies, systems & products into ("R&D") & internal IT projects. Must have bach. degree/equiv. in comp. science field + 5 yrs. exp. Send resume to S. Batista, LDS, 131 Madison Av., Morristown, NJ 07960.

Software Dev. Comp. in New Jersey and California req. Software Engg. w/MS & 1yr. exp. or its equiv. & Prog. Analyst w/BS & 2 yrs. exp. in foll.

JD Edwards: HP-9000, IBM AS/400, Oracle, DB2, Win NT, SQL/400, Cobol/400, JDE World Case: VB, VC++, COM/DCOM, Java, HTML, XML, ASP, JavaScript, SQL Server, UML, Object Oriented, Distributed Networking Systems.

Excel Benefits. Apply with resume to: Attn: Recruiter, Systems Inc. (formerly Compuware Solutions, Inc. 19726 East Colima Road, Rowland Hgts, CA 91748.

Sr. Applications Developer needed in our St. Louis and Chicago offices. We consult clients in design, development and implementation of custom computer software applications for e-commerce and other internet based systems utilizing Java and C++. Extensive travel is required. Send resumes to: HR Department, 500 Washington Avenue, Suite 1200, St. Louis, MO 63101.

Sr. Systems Analyst - Analyze, design and develop business applications, including wireless applications, using C++ and VC++. Also responsible for set up and testing of applications. MS in Computer Science, Engineering, Inf. Syst. or closely related field, and one year of experience required. $65,000/year DOE. Submit resume, referencing Job #7008645 to: The Philadelphia Job Bank, 444 N. 3rd St., 3rd Fl. Phila., PA 19123.

Software Engineer (Broomfield, Colorado) Master's Degree in Computer Science, Information Systems or Engineering and one year of experience in the design, development and implementation of applications and systems software utilizing programming in C++, Oracle, and SQL/ SQL PLUS on UNIX and Windows NT operating systems. We offer highly competitive salaries and a comprehensive benefits program. For consideration, forward your resume to DoubleClick, Inc., Attn: Kerin Messiner, Human Resources, 450 West 33rd Street, New York, NY 10001

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Systems Analyst needed for software development and consulting firm located in Oak Brook, Illinois. Job duties include: Analyze, design, develop, implement and test computer software applications. Windows NT design and roll-out. Use Windows NT, Novell and SCO UNIX networks; use TCP/IP and OS/2. Applicant must have 4 yrs. exp. in the job duties listed above or in any computer related occupation which includes 4 yrs. designing and developing computer applications using Windows NT, OS/2, and TCP/IP. Alternatively will accept a B.S. degree and 2 yrs. exp. in the above mentioned skills. 40hrs/wk, 8am-5pm, M-F, $58,826/yr. Send 2 copies of both resume & cover letter (no calls) to: Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605, ATTN: Joanne Breaux, REF# V-IL 24172-N. Must show proof of legal authority to work permanently in the U.S. AN EMPLOYER PAID AD.

SOFTWARE ENGINEER to design, develop test & maintain software applications using C++, Java, JavaScript, VB Script, Shell Programming, Oracle, MS Access, SQL Server, Visual page for developing the user interface. Automate testing procedure, servlets components, using Korn shell in Solaris and execute them in Unix and NT environment where Cache Server Orbix, and Application manager are running via connectivity options such as Port id's for TCP and SSL. Develop user interface for customers using java servlets. $76,648/yr. 40 hrs/wk. 9 a.m. - 5 p.m. Must have M.S. in Comp. Sci., Engg., rel field/equivalent. Send 2 resumes. Case #20004011, Labor Exchange Office, 19 Stanford Street, 1st fl., Boston, MA 02114.

Oracle Applications Sr. Consultant. Duties: Design, develop & implement multidimensional databases, OLAP systems using Oracle Express applications incl. Oracle Express Server, Oracle Financials Analyzer & Oracle Express Objects. Customize Oracle Financial Analyzer to automate data extraction from relational database system incl. Oracle General Ledger, data computation & data loading processes. Install, configure & tune Oracle Express database, Oracle Express Server & Oracle Web Application Server. Write custom applications for Oracle Express using SNAP! (Structured N-Dimensional Appl. Prog. Interface), Visual Basic & VBA (Visual Basic for Applications). Requires: B.S. in Comp. or Info. Sci. Eng. or related field & 2 yrs. exp. in the job offered or 2 yrs. exp. as a Consultant, Software Eng. or Developer Exp., which may have been obtained concurrently, must incl. 2 yrs. exp. designing & developing OLAP systems & 2 yrs. exp. using Oracle Express Server. EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Salary: $61,900/yr. Send resume (no calls) to: Deanna Tuccito, Answer Think, Inc., 817 W. Peachtree St., Suite 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

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Software Engineers (Falls Church, Virginia) Analyze, design, develop, implement and maintain client/server on UNIX/ WINDOWS. Designer 2000, Developer 2000 Server side development using PL/SQL, Pro *C. Install, maintenance, and system administration of Oracle Applications Releases 11/11i. Database Administration and Web Servers. Req. MS or its equivalent (B.S. plus 5yrs progressive exp.) in CS, or other related engineering field plus 1 yr exp. in job offered. Resume to HR Manager, Omnisoft Inc., 1295 Compass Pointe Crossing, Alpharetta, GA 30005.

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SOFTWARE ENGINEER to design, develop test, implement, maintain and enhance application software in 2- and 3-tier client/server environment for the telecommunications industry using Object Oriented methodologies and programming, C&CAF, CORBA, Java, C, C++, Shell Script, Oracle, RDBMS, UML, Rational Rose and Visual Cafe under SUN Solaris, UNIX and Windows NT operating systems. Require M.S. degree (or equivalent) in Computer Science, an Engineering discipline, or a closely related field, with three years of experience in the job offered or as a Programmer/Analyst or Network Engineer. A B.S. degree with two years of progressively responsible experience in the field will be accepted in lieu of the M.S. degree and three years of experience. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Sam Murthy, Bharath, CEO, ERP World, LLC, 6580 Jimmy Carter Blvd., Norcross, GA 30071. Attn: Job VV.

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SENIOR PROGRAMMER/ ANALYST to analyze, design, develop, test, implement, maintain and support application software systems in a in 3-tier client/server environment using Object Oriented methodologies, Visual Basic, COBOL, SQL, Lotus Notes, Lotus 1-2-3 and Display IV under Windows 95/NT operating systems. Require B.S. degree (or equivalent) in Computer Science, an Engineering discipline, or closely related field with 2 years of experience in the job offered. Two years of college education with an additional 4 years of experience in the field will be considered equivalent to the B.S. degree. Competitive salary offered. Apply by resume to: Manasori Chaveriya, CEO, Global Consulting Services, Inc., 3675 Crestwood Parkway, NW, Suite 350, Duluth, GA 30096. Attn: Job MM.

PRINCIPAL SOFTWARE ENGINEERS needed to research, design and develop multi-tiered functional web architecture using Oracle, Java and other tools; analyze enterprise business requirements/resources; create object models to provide internet enabled solutions; build integrated web enabled data warehousing applications/online analytic processing/reporting tools in a middleware environment. Master's required in Math, Computers, Engineering or any other related field of study, plus 3 yrs. exp. Employer will accept 5 yrs. of related, progressively responsible post Bachelor's experience in place of the Master's and 3 yrs. mentioned above. Must have proof of legal authority to work in the U.S.

Salary: $60,000/yr. for a 40 hr work week.

Interested applicants submit resume or C.V. in the Pinks Job Bank, 444 N. 3rd St., 3rd Fl., Phila., PA 19123. Refer to Job Order #5032860. Ad paid by an Equal Opportunity Employer.

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Senior Software Engineer whose responsibilities will include: requirements analysis, domain analysis, design, development and maintenance of software system for telecommunications products including data network components and network management architectures, using Object Oriented (OO) Development process, Object Oriented analysis, Object Oriented design and development tools (including use cases, Booch, Objectory, OMT) and Object Oriented languages. Define and document Object Oriented testing process and perform Object Oriented (OO) testing using Object Oriented testing methodology. Utilize knowledge of OO, intelligent agent, distributed system, relational and flat file databases, switches and telecommunication to define and enhance the system. This includes exploring and evaluating new technologies, design and develop software architecture and systems on Unix platform. Utilize the principles of data base systems, software engineering, theory of computation, compiler construction, computer architecture. Must have a Master of Science Degree in Computer Science or Electrical Engineering. Four years experience required as a Senior Software Engineer or four years as a Software Designer and/or Analyst and/or any combination thereof. Coursework must have included: data base systems, software engineering, theory of computation, compiler construction, and computer architecture. Experience must have been gained in the telecommunications industry and must have included: Object Oriented Software development using use cases, Booch, Objectory, and Object Oriented (OO) testing methodology. Applicants must have had experience in system development on a Unix platform, including relational database and flat file database development. 40 hours per week, 8:00 a.m. to 5:00 p.m.; $70,000 per year. North suburban Chicago location. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605. Attention: Joanne Breaux. Reference # V-IL 24232-N. An Employer Paid Ad. No Calls.

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SOFTWARE ENGINEERS needed for software development and systems design using Visual C++, Microsoft Foundation Classes (MFC) and C/C++ on UNIX and Windows NT platforms. Master's required in Math, Computers, engineering or any other related field of study, plus 1 yr of exp. Must have proof of legal authority to work in the U.S.

Salary: $67,000/yr for a 40 hr work week.

Interested applicants submit resume or C.V. to the Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123. Refer to Job Order #9112048. Ad paid by an Equal Opportunity Employer.

Required a Software Engineer to design and develop GUI software in VC++ using MFC Constructs, Crystal Reports, ODBC, objective grid code base. Has to know about object, Oriented techniques and multi-threading concepts. The job includes managing source code using Visual Source Safe, make release versions of the application software developed, support existing source code, develop & direct software system and testing procedures, programming and documentation. Need to have knowledge in advanced computer graphics, advanced data structures, advanced operating systems & microcomputer applications as evidenced by graduate course work. Required Masters in any field with emphasis on computer applications and 6 months experience in the job offered or 6 months experience as a programmer. Job includes 40 hours per week, 9AM - 5PM, and $53,000 per year. Job is located in Coconut Creek, FL & at various unanticipated locations throughout US. Send your resume to Agency for Workforce Innovations/Bureau of Workforce program support, P.O. Box 10869, Tallahassee, FL - 32302; RE: JOFL#2141403.

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Consultant. Design, develop, implement and test software for document management systems. Tools: C, C++, Windows NT, SQL, COM. M.S. in Computer Science or Electrical Engineering + 1 yr. exp. in job offered or as a Software Engineer required. Previous exp. must include C++, SQL. 40 hrs/wk, 9am-5pm. $80,000/yr. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of resume & cover letter to: Illinois Dept. of Employment Security, 401 S. State St. 7 North, Chicago, IL 60605. Attn: Sheila Lindsey. Ref# V-IL 24660-L. Employer Paid Ad. No calls.

Software Engineer wanted by automated securities trade execution/analysis company in Culver City, California. Must have BS (or equiv) in comp sci, comp eng or related field plus 1 yr exp designing data modeling, implementing & maintaining large scale RDBMS, incl database admin (DBA) & advanced SQL. Send resume to: Beth Boughton, ITG, 44 Farnsworth Street, 9th Floor, Boston, MA 02210. No phone calls.

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Airport LANs

and ramp operations, said Jimmy Burk, the Memphis-based company's vice president of IT. "The payback is huge" in extending high-speed network connections to mechanics, who can use the wireless LAN to tap into a remote database to help with repairs, he said.

Air France, based at Charles de Gaulle, installed here what some call the world's largest wireless LAN, with 160 access points. It's designed to help ground crews match bags loaded on an airplane with the passengers aboard. Air France has already achieved more quickly dispatched flights.

The baggage-matching requirement, established by civil aviation authorities after Libyan agent Abdel Baset Ali Mohmed Al-Megrahi planted a bomb on a TWA plane that then crashed in Lockerbie, Scotland in 1988, is designed to prevent unaccompanied bags that could contain a bomb from being loaded on a flight.

In the past, if the carrier couldn't get a match between bags and passengers, it had to unload all the bags — which could take two hours or more.

Today, baggage handlers using handheld scanners send data from a bag's bar code over the wireless LAN installed by Symbol Technologies Inc. in Holtsville, N.Y., for correlation with manifests housed on the Air France mainframe. The wireless scanning system also makes it easier to locate a bag in the cargo hold.

Lacoste said Air France has started to study adding applications to the Charles de Gaulle LAN to support ground vehicle PCs and voice over IP wireless phones to replace the 1,500 mobile radios the carrier currently uses at the airport.

To host those applications, Lacoste said, Air France is also studying whether it would need to switch its wireless LAN protocol from the IEEE 802.11 standard, which provides throughput of 2M bit/sec. at long distances, to the new industry standard 802.11B, which provides 10M bit/sec. but has a shorter range.

Gemma Paulo, an analyst at Cahners In-Stat Group in Scottsdale, Ariz., said that airport wireless LANs "are one of the fastest-growing segments of the wireless LAN industry" and that it makes sense to piggyback applications, such as voice over IP. But, she added, Air France needs to look at the payback it could expect from a switch from radios, since "the handsets are expensive, between $500 and $700 each."

AT A GLANCE

Air France:

- Plans to install wireless LANs at 12 airports during the next three to four years.
- Will use wireless LANs to provide Ethernet-like connectivity to mechanics and support vehicles.
- Currently operates a 160-node wireless LAN at Charles de Gaulle Airport in Paris to support its bag-matching system.
- Is studying adding applications to the Paris LAN, including voice over IP wireless phones.

Continued from page 1

Programmers

quality of projects for some companies that deliver wireless services for their customers.

"If you're a company selling wireless services and some of your features don't work, you can't tell your customer that you don't have enough people in-house to [make it] work properly," he said.

Major wireless vendors, including Aether Systems Inc. in Owings Mills, Md., and 724 Solutions Inc. in Toronto, said they haven't had difficulties finding good workers. Aether said it has acquired companies with needed talent; 724 Solutions said it draws talent from local universities.

But some recruiters and analysts said other companies are struggling to fill wireless positions. Recruiters said it typically takes two to three times longer to fill a wireless programming position than other types of IT jobs. It's hard to find developers with experience in both the Wireless Application Protocol and Wireless Markup Language, the two dominant languages for wireless application development, said David Chamberlain, an analyst at Probe Research Inc. in Cedar Knolls, N.J.

Wireless development is "fairly arcane and complex coding with little resemblance to the HTML programming that most developers are familiar with," said Chamberlain. "It's not easy to get data onto a wireless device from a technology standpoint, and as a result, developers must go through a learning curve."

Other analysts and recruiters said wireless architects are even tougher to find than programmers. Architects provide the "nuts and bolts" of how to get a wireless project up and running, said Jack Gold, an analyst at Stamford, Conn.-based Meta Group Inc.

As a result of the talent shortage, some companies are more cautious about doing projects at all, while others are holding off on full-fledged wireless deployments until the market has matured, Gold said. And though some cutting-edge companies — such as Memphis-based FedEx Corp. — have performed their development in-house, others have chosen to outsource.

"I think a majority of financial institutions are outsourcing wireless" projects, said Joy Marshall, a senior vice president at Wachovia Corp. The Winston-Salem, N.C.-based bank outsourced its wireless banking initiatives to integrator 724 Solutions because it thought it was a better investment decision to go with wireless specialists rather than build its own group in a new and constantly changing area.

When the Washington Redskins football team moved to offer wireless access to its Web site and other mobile services in October, the team would have had to outsource the development work if Ztango Inc. in Herndon, Va., had not offered to do it for free. The team didn't have the "manpower to handle developing and supporting the application in-house," said Jason Gould, director of Redskins.com.

Steve Zerby, e-business technical strategist at Owens Corning in Toledo, Ohio, said the building materials maker has a few wireless prototypes in the works. "But typically, whenever we [implement] a technology on a significant basis — enterprisewide — we involve a third party because we have a small IT staff," he said. "We also want to take advantage of the fact that there are people out there with specialized skills."

That means the skills shortage is a problem for the vendors that companies want to hire to do the work. Josh Leet, director of recruiting at Flying Star Inc., a wireless application services start-up in Watertown, Mass., said he wants to fill seven wireless developer positions by next month. But Leet said he's coming up short on U.S. candidates and has instead decided to look in Europe and India.

Mobile Growth Spurt

The market for wireless services delivered via application service providers is expected to grow tremendously in the next few years:

1999: **$14M**

2004: **$732M**

SOURCE: IDC PUBLISHING WIRE

Supermarket Dumps $89M SAP Project

BY LUCAS MEARIAN

Canada's second-largest supermarket chain has abandoned an $89 million implementation of SAP AG's business applications for retailers after a five-day database and systems shutdown affected the company's business operations for nearly a month.

Bill McEwan, president and CEO of Stellarton, Nova Scotia-based Sobeys Inc., said during a conference call last month that "growing pains" expected by the 1,400-store retail chain on the 2-year-old project became "in fact systemic problems of a much more serious nature." McEwan, who inherited the SAP implementation when he joined Sobeys in November, added that it would have taken another two years to finish the software rollout.

The system shutdown in December resulted in "unprecedented" out-of-stock issues with products at many of Sobeys' corporate-owned stores, McEwan said.

The SAP Retail software couldn't effectively deal with the "extremely high number of transactions in our retail operating environment," McEwan said. The disruption also forced Sobeys to implement work-arounds for its accounting department.

Bill Wohl, a spokesman for SAP's U.S. subsidiary in Newtown Square, Pa., said the vendor was surprised by Sobeys' decision to jettison the project. "This is not a problem with the SAP software itself," Wohl insisted. He added that Sobeys does plan to continue using SAP's human resources and financial applications.

Wohl said there are unique data processing challenges facing retailers "above and beyond" any implementation difficulties that may be posed by applications such as those made by SAP.

Sobeys plans to replace the SAP applications with software that can be installed more quickly and that "will fully meet all the business requirements" at the company, McEwan said.

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Linux Nerves

LINUX IS MAKING LOTS of vendors nervous these days. Some, like the folks at IBM and Hewlett-Packard, are throwing money at Linux — they hope to get in on the ground floor of the Next Big Thing. Others, like Microsoft, are throwing whatever sticks and stones they can find — they hope the buzz fades and the Linux bandwagon crashes and burns.

Yep, these vendors are nervous. And for corporate IT people, that nervousness is an advantage — no matter what we happen to think of Linux. Is this a great system, or what?

Nervousness is why a Microsoft executive was at the LinuxWorld show in New York last week, bending the ears of reporters with predictions of a Linux crash and burn. But then, Doug Miller's title is group product manager for competitive strategies. If he wasn't trashing the competition, he wouldn't be earning his paycheck.

Miller predicts flat growth, evaporating interest and a steep drop in Linux companies' stock prices in 2001. (Any comparisons to Microsoft's performance in 2000 are left as an exercise for the reader.)

Nobody much believed Microsoft CEO Steve Ballmer when he told analysts last month that beating Linux "really is Job 1 for us." But when Microsoft sends a guy out to trash-talk the star of the show at a conference, you know somebody's worried.

Which means we've got leverage when it's time to talk dollars and units with Microsoft. If they really don't want us to try Linux, let 'em come up with a sweeter deal.

Nervousness had IBM, HP, Compaq and other Linux investors pacing the LinuxWorld aisles, too. These guys need a return on their investment; IBM alone is spending a cool billion on Linux this year. That's not a side bet, even for Big Blue.

If the Linux play doesn't pay off, things could get ugly. So the Linux backers are talking up Linux with as much energy as Microsoft is talking it down.

And that gives us bargaining power, too. If IBM wants to sell us Linux, we've got a choice. What's so special about IBM's Linux instead of, say, Compaq's or HP's — or anyone else's Linux, for that matter? They all know they've got competition; if their Linux is so great, they can prove it by cutting us a great deal.

Does that sound callous and cynical? Sure it does. Hard bargaining is like that. Unless you're a true believer — in Linux or Windows 2000 or mainframes or some other best-of-all-possible-worlds technology — you're not buying IT products because you love them, but because they're the best for doing what you and your users need to accomplish.

And the fact that you can walk away from any vendor's table is your strongest bargaining chip in cutting the best deal.

Competition — real competition — gives us enough product choice so we can walk away from that table. Right now, Linux is generating a lot of competition. For IT shops, that's all good.

Best of all, we don't even have to like Linux.

And the best part about it is, we don't even have to *like* Linux. We don't have to approve of its weird, loose-knit, nobody-in-charge, everybody-does-it-for-free development approach. We don't have to buy into its pseudo-utopian free-software philosophy.

We don't even have to trust it to survive on its own. IBM, HP and the rest are investing billions of dollars in Linux; they'll pick up the ball if the free-software guys drop it.

So we can treat Linux like any other product. We can use it to pit vendors against one another. We can demand the best terms. We can close the best deal.

And yeah, that makes IT sellers nervous. But it should make IT buyers feel just fine. ◗

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

TRANSPLANTED YANKEE pilot fish in Sweden can't get his document to print. The printer keeps flashing "redo." "I took apart half the printer looking for a paper jam or empty tray," the fish grumbles, "trying to figure out why it wanted me to redo my print job." Finally a local offers a linguistic tip: "Redo" is Swedish for "ready."

BECAUSE IT'S SO CLOSE TO STAMFORD? Data security pilot fish is in a meeting to discuss converting the mainframe clock from local time to Greenwich Mean Time. One participant doesn't quite understand the problem and finally leans over to the person sitting next to her and asks, "Why do we care what the time is in Greenwich, Conn.?"

SYSADMIN PILOT FISH is upgrading the e-mail system and needs everyone to log off briefly. So the net admin gets on the company intercom and asks "all mail users to log off the network immediately." Sure enough, the phone rings, and a female voice asks, "Do the women have to log off the network, too?"

GO CONFIGURE IT pilot fish is called in by the configuration management (CM) chief, who tells him the fish's proposed project isn't following the new CM procedures. "What new procedures?" asks pilot fish. "They're not released yet," says CM chief, "but here in my desk is the draft I just wrote – you can make a copy if you like." Pilot fish is nonplussed until he hears from another engineer who also got called on the CM chief's carpet for "not following the new improved procedures." When this engineer asked for a copy, the CM chief told him, "Oh, I haven't written it yet."

CEMENT COMPANY IT pilot fish is trying to fix a salesman's laptop, but some operating system files seem to be missing. Do you still have your Windows 98 CD? he asks the salesman. "What?" sniffs the sales guy. "I don't listen to CDs!"

BUT BOY, ARE THEY TRAINED Big health care organization buys a new Web-based time reporting system. It's so feature-heavy that all managers and team leaders are required to go for three days of training, learning all the bells and whistles. Trouble is, says a pilot fish on the inside, "the money to upgrade the PCs was cut from the budget." So now everyone knows all the ins and outs of this nifty new system – "and we are still using our mainframe CICS time reporting system until further notice."

Notice my address: **sharky@computerworld.com**. You get a sharp Shark T-shirt if your true tale of IT life sees print – or if it shows up in the daily feed at *computerworld.com/sharky*.

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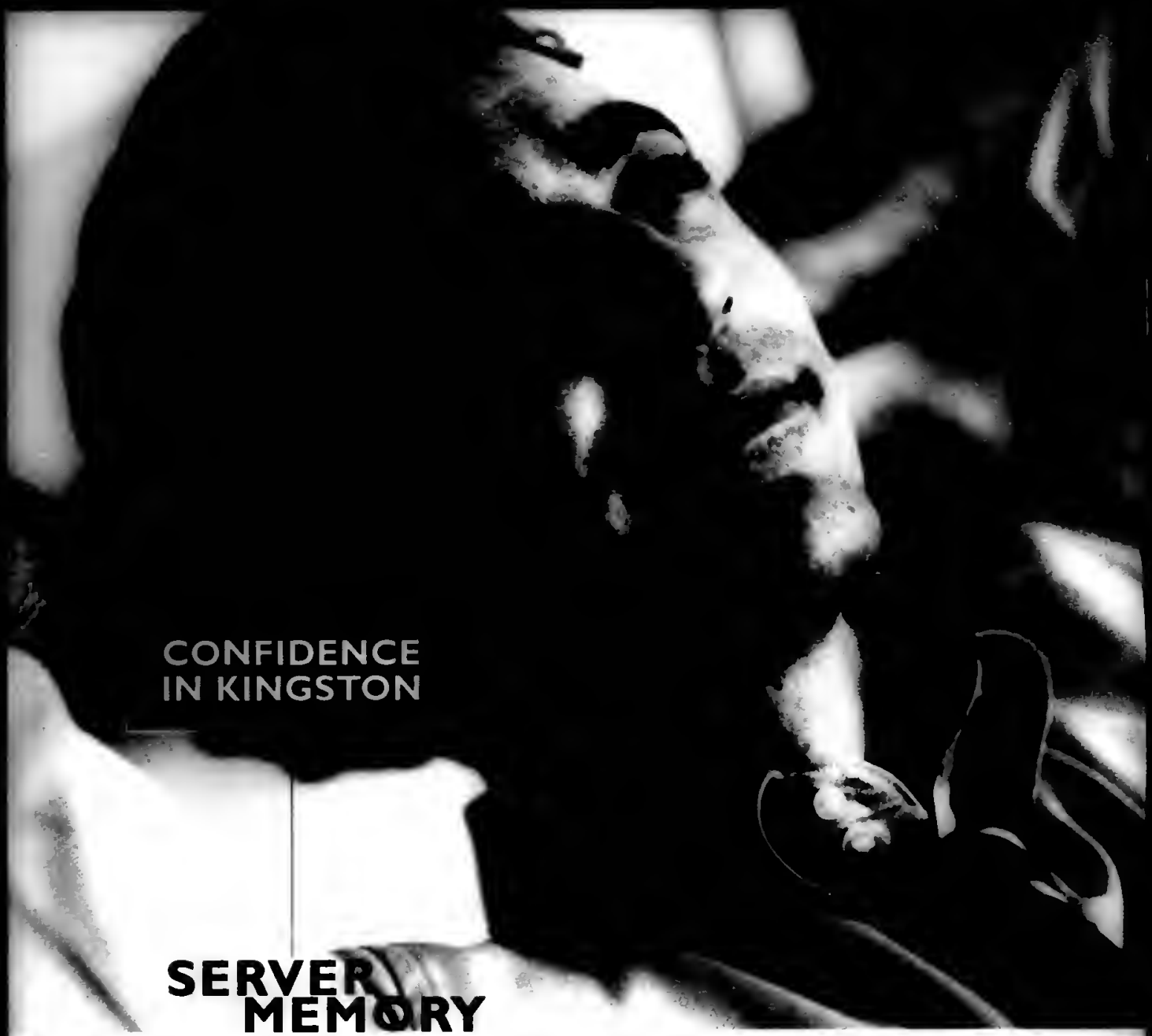

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